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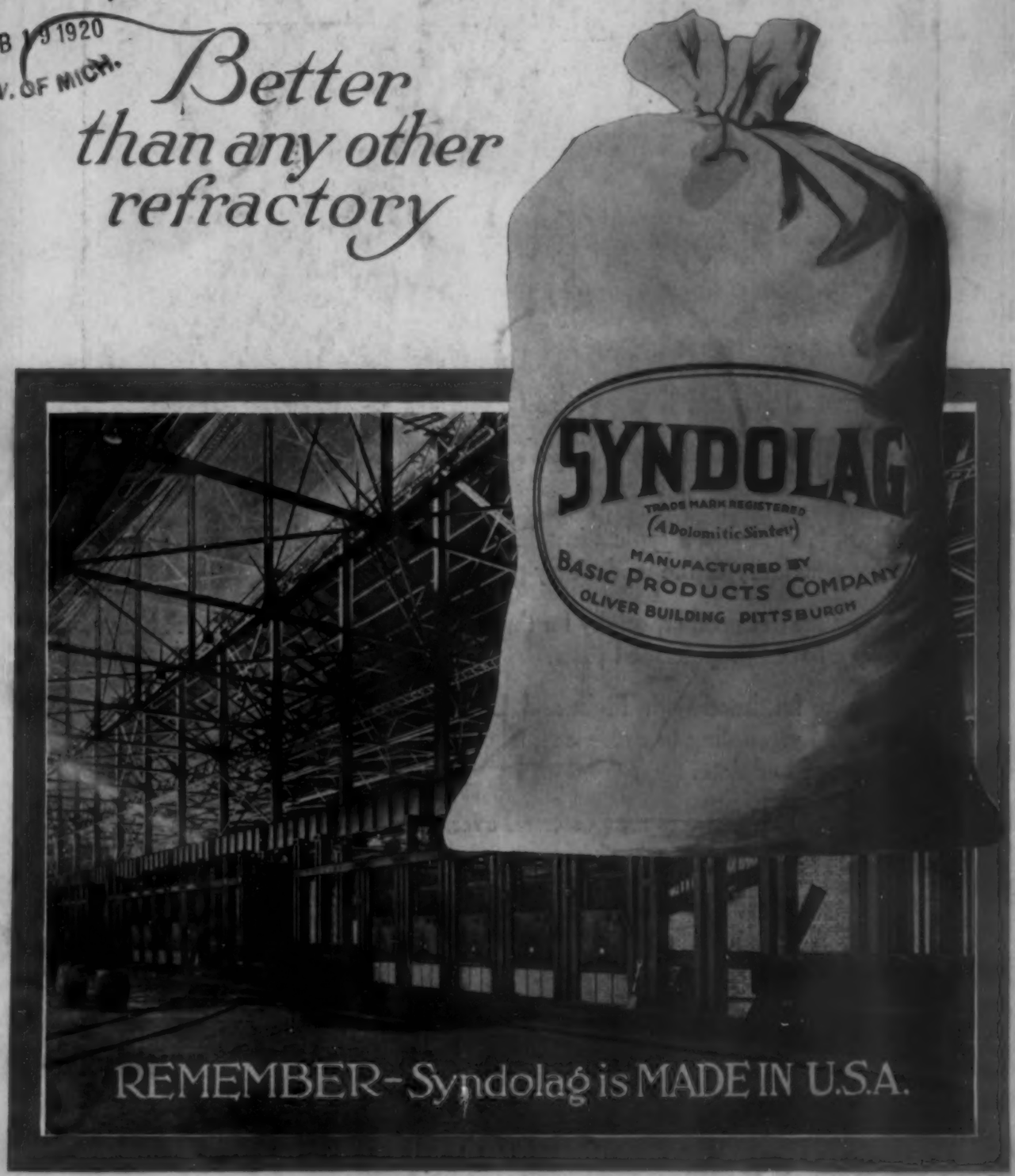

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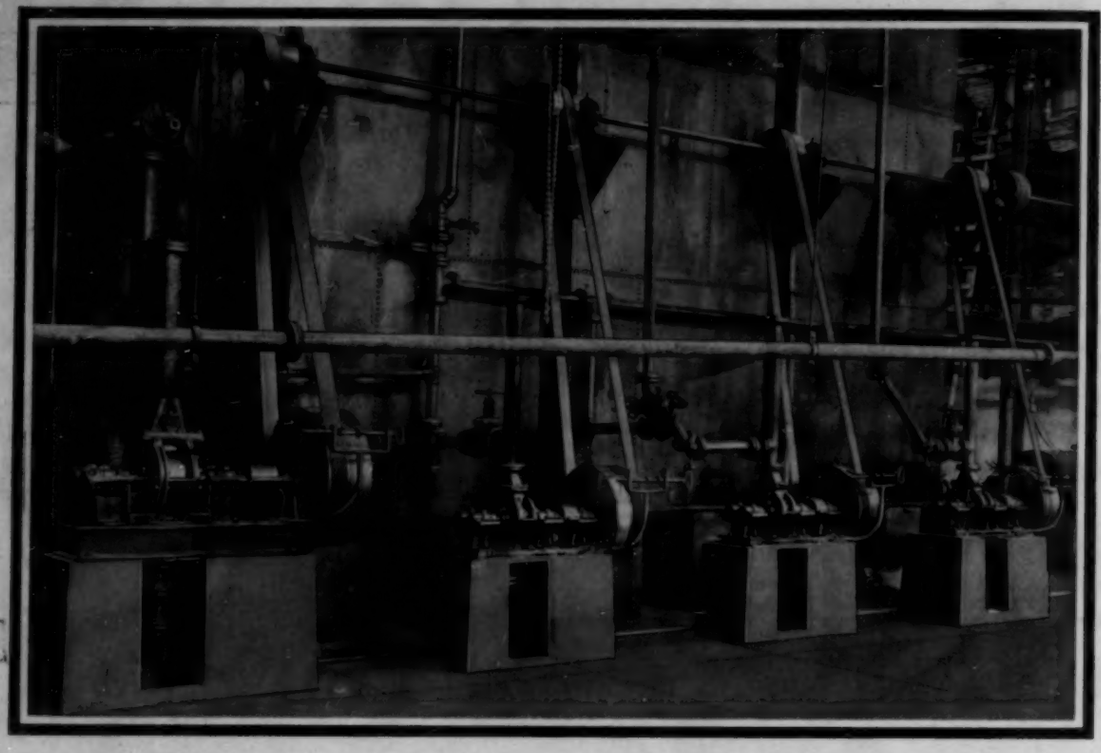

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Important advantages are possessed over other types of pumps. Write us for particulars.

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THE CONNERSVILLE BLOWER CO.

Chicago, Monadnock Block CONNERSVILLE, IND. New York, 114 Liberty St.

THE IRON TRADE REVIEW

Vol. LXVI Cleveland, February 19, 1920 *No. 8*

Traffic Obstacles Block Industry

Storm Conditions Render More Acute, Delays of Shipments and Lack of Material—Production More Generally is Affected—Higher Prices Rule on Early Delivery—Railroads are More Active Buyers—Ore Sales Heavy

TRANSPORTATION troubles aggravated by the severe storms in the East have spread to a larger area in the iron and steel industry and still represent the controlling market influence. Production continues to be held in check both by a lack of manufacturing materials and by the blockade of outgoing shipments. Open top cars rarely used for certain finished lines are being pressed into service. Sheet mill output is down to 70 per cent because of steel shortage. Wiremakers in the Pittsburgh district have about filled their storage space and unless the supply of cars improves, suspensions are in sight. An eastern plate plant has been forced to shut down 20 of 22 open-hearth furnaces for want of coal. Some blast furnaces have been banked. New England is under an embargo on pig iron.

Steel prices reflect the contraction of supplies and are keeping up their advances, especially for early delivery. Prompt steel bars have been sold at 4.75c, Pittsburgh, and early shapes at 4.00c. Hoops and bands are up to 4.00c and 4.50c, base. Chain has been uniformly established at 6.25c, base Pittsburgh. Bessemer sheet bars have been sold at $70, Pittsburgh. Warehouse prices have been raised $10 per ton at Chicago and correspondingly in other districts.

Railroads In the Market

Railroad business continues to grow. The return of these systems to private management slated for next week is expected to stimulate demands of this character since it is apparent important orders have been undergoing quiet negotiations. At Chicago there is considerable confidential inquiry for cars including one lot of 2500 refrigerators. The mills clearly show a disposition to favor the railroads on steel purchases wherever possible. The Pennsylvania bought 6000 tons and the Norfolk & Western, 7000 tons of plates at 3.50c, Pittsburgh. This price, which is below the general market level, has been made on other railroad lots.

Export business has been more active the past week with the improvement in exchange conditions. Japan has brought forth large new inquiries for ship steel. A 1500-ton plate order for Scotland was placed and Italy bought 1000 tons of sheets.

Much Work Is Active

Despite the apparent deterrent to new awards through the high prices and the scarcity of material, structural contracts are of heavy total. Lettings in January represented 75 per cent of fabricating capacity or about 135,000 tons. One New York fabricator in January bid upon 50,000 tons and passed by as large a tonnage. The 17,000-ton union station at Chicago has been postponed indefinitely and all steel bids have been returned. Cast iron pipe bids taken or asked by the city of Chicago totaled 20,000 tons. A 10,000-ton reinforcing bar inquiry is current at Cleveland.

Lake ore sales continue to be made on a remarkable scale for so early in the season. It is estimated at present that 25,000,000 to 30,000,000 tons has been sold in the market or set aside for furnace interests affiliated with the operators. By March 1 it is believed practically the entire expected season's movement will be under order.

Scotch Iron Offered

Scotch pig iron has been offered the past week at $45.75 to $46.60, Philadelphia, or practically the same basis as eastern Pennsylvania metal of corresponding quality. No business has resulted, however. As the cables continue to record that the advance of British iron prices is keeping step with that on this side, the possibility of extensive importations is believed to be remote. The domestic market still is on the rise though the movement the past week has been less pronounced because sales have been in lighter volume. A considerable tonnage of Buffalo iron now has been sold at $45, base. Southern Ohio makers are up to that figure. Some large buyers still are in the market for second and third quarter iron. The recent purchases of the Ford Motor Co. are placed at 30,000 tons which went largely to the South. Two important automobile interests in the Detroit district are figuring on about 30,000 tons.

FEBRUARY 19, 1920

THE IRON TRADE REVIEW

A weekly publication devoted to the iron, Steel, Foundry and Metal-working Industries

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Readjustment Makes a Beginning

FUNDAMENTAL evidence that the process of world readjustment already has made a preceptible beginning is to be found in the record of the country's foreign trade for 1919. Although Europe is seen with an adverse trade balance of $4,435,000,000, details of import and export movements disclose that the allied countries, where the exchange is lowest, are reducing or holding down their buying in the United States, while at the same time, they are increasing their exports to this country. The enormous gain in the exports to Europe has been for the account of neutral countries. This indicates that the sickness of the exchanges is beginning to work out its own cure which will be emphasized progressively as Europe is able to work up raw materials now being purchased and later send them back to this country for sale.

How the demand for raw materials is expanding at the expense of finished goods is revealed by the foreign trade reports. The prewar average ratio of exports of raw materials to total exports was 33 per cent. In 1918 this ratio was 15 per cent; in 1919 20 per cent and in December it had grown to 33 per cent. Finished manufactured exports, on the other hand with a prewar ratio to total exports of 32 per cent stood at 30 per cent in December. Similarly, foodstuff exports before the war were 17 per cent of total exports. In 1919 they were 33 per cent but in December they were 25 per cent, indicating the progress being made toward self-support on the part of the European peoples. Of great significance also is the fact that last year imports from Europe were 12 per cent of exports to Europe compared with 8 per cent in 1918 and 59 per cent before the war. In December however this ratio had grown to 22 per cent.

The United Kingdom in 1919 bought but 12 per cent more in this country than in 1918; Italy bought 10 per cent less; France 4 per cent less and Belgium 144 per cent more. Denmark increased her purchases here in 1919 over 1918 by 1350 per cent; Holland by 2146 per cent; and Sweden by 749 per cent. Germany got $92,761,000 of American goods last year against none the year before. While the imports from the allies increased vastly in percentages, the total figures still show that much improvement must be made before international trade recovers its equilibrium.

Higher Pay Means Less Work

DATA now in possession of statisticians is far from conclusive as to the relation of hours of labor to productivity. Distrust of the conclusions of socalled authorities on this point is natural since much usually is due to partisanship in an effort to make the facts square with a preconceived theory. While figures do not lie many false conclusions, it has been frequently shown, can be drawn from the most innocent compilation by shrewd manipulation.

Nowhere is there proof that eight hours or six hours constitute the proper length of a working day. Nor can the conclusions reached from the experience of one industry be applied to another or serve as a guide to the other. It is stated that workers produce more in an 8-hour day than in 10 hours and that more is accomplished in six hours than in eight. But these are conclusions based on too few actual facts or figures and the issue is likely to be clouded by other factors, widely variable.

But another angle of the situation is being presented in an unmistakable way, so that none can escape the hard facts. This is that men do less work for high pay than for low. When their services are in demand, as at present when employers are competing for workers, wages are forced up. Once men are confident of obtaining employment almost without effort, many of them, it is clear, become slack, insubordinate and utterly careless of results.

An instance recently going the rounds tells of the experience of a British piano manufacturer who closed

his plant because it required 26 workers now to do what six did before the war, as compared with results at presumably eight times the total wage. The statement is made by this manufacturer that "the cost of polishing alone is equal to the prewar cost of a completed piano, including the materials."

Perhaps the situation in America may not match this but present conditions here differ only in degree. Meanwhile it seems possible only to keep going ahead with the idea that things will right themselves in time and something like the former equation of wages and results shall be restored. Until it is it is impossible to see how normal production and more reasonable prices in general can be expected.

Adjusting Coal and Coke Prices

GOVERNMENT authorities in Washington seem to be unwilling or unable to pass upon the present price situation as it applies to coal and coke. Repeated efforts have been made by producers and consumers to get definite rulings on the question, but without avail. Members of congress have attempted to get the information for their constituents, with no result. The spectacle is thus presented of congress not knowing to what authority to appeal, if such authority exists, and has resulted in Senator Frelinghuysen having the senate pass a resolution calling upon Director General Hines to inform that branch of congress as to the powers of the railroad administration conferred upon it under the Lever act by the now non-existent fuel administration. Department of justice officials, supposedly in control of price regulation of coal and coke, say they cannot interpret the regulations except through a request of cabinet officers or the President. They suggest that the legal departments of the affected trades be asked to pass upon the different issues involved in coal and coke contracts and prices.

This is only an example of the almost inevitable confusion arising from the government meddling with private business, yet the circumstances under which the government did so in this case—the coal strike—justified it in taking drastic action. But it should have created better machinery than it did so that instead of having a makeshift it would have had a properly organized department which could readily pass upon the issues that naturally would arise.

The present situation which is but a case in kind again calls forth the earnest hope that government regulation of all kinds will be removed quickly.

Practical Perfection in Tin Plate

TIN plate, which is classified as prime stock, seldom is perfect in every sense of the word. It may have minute defects which may or may not be visible to the naked eye but this fault cannot be laid at the door of the manufacturer. Various factors, often beyond the control of the operators, enter into the manufacture of this commodity. Expansion and contraction of the hot mill rolls together with the irregularity of their surface due to wear, often is the cause of the plates showing a variation in gage. Even though the hot mill crews use extreme care in manipulating the pack during the rolling process, they cannot arrest the variation in the thickness of the outside sheets, or those coming in contact with the rolls, and the inside sheets; neither can they prevent the irregularity of gage between the front and rear end of the pack.

Coating the plate uniformly also requires skill. The amount of coating which a plate will take depends upon the amount of tin in the pot, the speed of the rolls, the temperature of the molten tin and the temperature and consistency of the palm oil. Slight any one of these factors and the resultant plates will show variations in the amount of coating. Nor have modern tinning machines been developed to such a point where the rolls distribute the tin evenly over the surface of a plate.

Despite the fact that the hot mill and tin house superintendents keep a close tab on every step of the manufacture of plates from the time the tin bars are heated until the product is shipped in the finished state, minor defects are bound to arise. American tin plate manufacturers, however, are turning out as high-grade primes as any country in the world. Therefore, when a consumer buys prime plates he can rest assured that the product is manufactured as perfectly as it is possible to do so.

Passing of the Beehive Oven

AFTER years of steady gains, the annual output of by-product coke in the United States finally has exceeded that of beehive coke, according to the preliminary figures for 1919 issued by the geological survey. In 1919, the by-product plants of the country yielded 25,171,000 tons while the output for the beehive plants is estimated at 19,650,000 tons. These statistics serve to emphasize the passing of the beehive oven, which at one time supplied all the coke to the iron and steel plants of the country. Apparently, it is but a question of time when the beehive oven will cease to be a common source of coke supply for the iron and steel industry.

It is only logical that the by-product oven should take the lead in the production of coke. Modern industry calls for the most highly developed methods of production, which afford economy, greater efficiency and wide application. The by-product oven possesses notable superiority over the beehive oven in all these important particulars.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 598 AND 600

Pig Iron

Bessemer, valley	42.00
Bessemer, Pittsburgh	43.40
Basic, valley	43.00
Basic, Pittsburgh	44.40
Basic, delivered, eastern Pa.	40.00 to 41.00
Malleable, Pittsburgh	45.40
Malleable, Chicago, furnace	43.50
Malleable, Buffalo, furnace	41.25 to 42.25
Malleable, delivered eastern Pa.	45.00 to 45.50

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$46.10 to 47.10
No. 1X, Buffalo	48.00
No. 1 foundry, Chicago, furnace	45.25
No. 2 foundry, valley, Pittsburgh	43.40 to 44.40
No. 2 foundry, Buffalo	45.00
No. 2 foundry Buffalo, Boston	43.90 to 44.90
No. 2X, Buffalo, Boston	46.25
No. 2 foundry, Chicago furnace	43.00
No. 2 foundry, Ironton furnace	45.00
No. 2 foundry, Cleveland furnace	42.00 to 43.00
No. 2X, eastern, del., Phila.	44.60 to 45.60
No. 2X, eastern, N. J., tidewater	44.60 to 45.60
No. 2X Pennsylvania, Boston	46.15 to 47.15
No. 2 foundry Pennsylvania, Boston	44.90 to 45.90
No. 2X, foundry, Buffalo furnace	43.25 to 46.25
No. 2 foundry, del., Philadelphia	43.60 to 44.60
No. 2 foundry, N. J., tidewater	43.60 to 44.60
No. 2 southern, Birmingham	40.00 to 42.00
No. 2 southern, Cincinnati	41.60 to 43.60
No. 2 southern, Chicago	45.00
No. 2 southern, Phila.	43.50 to 44.50
No. 2 southern, Cleveland	43.00 to 45.00
No. 2 southern, Boston (on dock)	45.75
No. 2 southern, St. Louis	42.30 to 44.30
No. 2X, Virginia, furnace	43.25
No. 2X, Virginia, Philadelphia	47.35
No. 2X, Virginia, Jersey City	47.65
No. 2X, Virginia, Boston	45.95 to 46.20
Gray forge, valley, Pittsburgh	42.40
Gray forge, eastern Pa.	41.50
Silveries, 8%, furnace	50.00 to 55.00
Ohio Silveries, 8%, Chicago	56.30
Tennessee Silveries, 8%, Chicago	56.30
Low phos. standard, Phila.	53.80
Low phos. Lebanon, furnace	45.00
Low phos. standard, Pittsburgh	49.40 to 50.40
Charcoal, Superior, base, Chicago	57.50

Coke

(At the ovens)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	8.00
Wise county furnace	7.25
Wise county foundry	8.25

Ferroalloys

Ferromanganese, 80 per cent. delivered, domestic metal	$160.00 to 180.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	150.00 to 155.00
Spiegel, 18 to 22 per cent furnace spot	57.00 to 60.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 85.00
Ferrotungsten, standard, per pound contained, furnace	90c to 1.10
Ferrochrome, 60 to 70 per cent chromium, 6 to 8 per cent carbon, per pound contained, maker's paint	19c to 20c
Ferrovanadium, 30 to 40 per cent per pound contained, according to analysis	$6.00 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	59.00 to 64.50
Bessemer, ferrosilicon, 11 per cent	62.80 to 67.80
Bessemer, ferrosilicon, 12 per cent	66.10 to 71.10

Prices at Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	65.00 to 75.00
Open-hearth, Youngstown	65.00 to 75.00
Open-hearth, Philadelphia	59.10 to 64.10
Bessemer, Pittsburgh	65.00 to 75.00
Bessemer, Youngstown	65.00 to 75.00
Forging, Pittsburgh	75.00 to 80.00
Forging, Philadelphia	69.10 to 74.10

SHEET BARS

Open-hearth, Pittsburgh	$65.00 to 70.00
Open-hearth, Youngstown	65.00 to 70.00
Bessemer, Pittsburgh	65.00 to 70.00
Bessemer, Youngstown	65.00 to 70.00

SLABS

Pittsburgh and Youngstown	60.00 to 65.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00 to 65.00
Grooved skelp, Pittsburgh	3.25c to 4.00c
Sheared skelp, Pittsburgh	3.45c to 4.00c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.75c to 4.00c
Structural shapes, Philadelphia	2.70c to 4.15c
Structural shapes, New York	2.72c to 4.17c
Structural shapes, Chicago	2.72c to 2.97c
Tank plates, Pittsburgh	3.00c to 4.00c
Tank plates, Chicago	2.92c to 3.17c
Tank plates, Philadelphia	2.90c to 4.25c
Tank plates, New York	2.92c to 4.27c
Bars, soft steel, Pittsburgh	3.00c to 4.75c
Bars, soft steel, Chicago	2.62c to 2.87c
Bars, soft steel, New York	2.62c to 4.27c
Bars, soft steel, Philadelphia	2.60c to 4.25c
Bar iron, common, Phila.	3.75c to 4.00c
Bar iron, common Chicago	3.50c to 4.00c
Bar iron, common, Cleveland	3.75c
Bar iron, common, New York	3.77c to 4.02c
Bar iron, common, Pittsburgh	4.25c
Hard steel bars, Chicago	3.25c to 3.50c

Rails, Track Material

Standard bessemer rails, mill	$45.00 to 60.00
Standard open-hearth rails, mill	47.00 to 62.00
Relaying rails, light, St. Louis	45.00 to 50.00
Relaying rails, Pittsburgh	45.00 to 50.00
Angle bars, Pittsburgh base	3.00c to 4.00c
Angle bars, Chicago base	3.75c
Light rails, 25 to 45, mill	3.00c to 3.50c
Spikes, railroad, Pittsburgh	3.75c to 3.85c
Track bolts, Pittsburgh	6.00c
Track bolts, Chicago	6.25c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers, 5c more)

Wire nails, Pittsburgh	3.25c to 4.25c
Plain wire, Pittsburgh	3.00c to 3.50c
Galvanized wire, Pittsburgh	3.70c to 4.20c
Barbed wire, painted, Pitts.	3.40c to 3.90c
Barbed wire, galvanized, Pitts.	4.10c to 4.60c
Cut nails, Pittsburgh, l. c. l.	6.195c
Coated nails per count keg, Pitts.	2.85c to 4.00c
Polished staples, Pittsburgh	3.40c to 4.25c
Galvanized staples, Pittsburgh	4.10c to 4.95c

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Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	6.25c
Sheet piling, base, Pittsburgh	2.55c to 3.65c

Cold rolled strip steel, hard coils, 1 7/8 inches and wider by 0.100 inch and heavier, base per 100 pounds, 7.00c to 8.00c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c to 6.50c
No. 28, bessemer, Pitts.	4.35c to 6.50c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c to 5.50c
No. 28, bessemer, Pitts.	4.35c to 5.50c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c to 7.50c
No. 28, bessemer, Pitts.	5.70c to 7.50c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c to 6.00c
No. 10, bessemer, Pitts.	3.55c to 6.00c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.80c to 5.05c

Full sheet schedule page 600.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
⅜ to 3 in., butt, steel	54 to 57½	40½ to 44
⅜ to 3 in., butt, iron	34½	18½

Full pipe schedule page 600.

Boiler Tubes

Steel, 3½ to 4½ inches, c. l.	30½ to 40½
Iron, 3½ to 4½ inches, c. l.	11

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B

Four-inch, Chicago	$75.80
Six-inch and over, Chicago	72.80
Four-inch, New York	73.30
Six-inch and over, New York	70.30
Four-inch, Birmingham	69.00
Six-inch and over, Birmingham	66.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	4.00c to 4.50c
Bands, Pittsburgh	4.00c to 4.50c
Hot rolled strip steel, Pitts. stamping quality	5.00c to 5.50c
Cold finished steel bars, Pitts., base	3.85c to 4.95c

Rivets

Structural rivets, Pittsburgh	4.50c
Boiler rivets, Pittsburgh	4.60c
Rivets ⅞ in. and smaller Pitts.	50 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(½ x 6 inches, smaller and shorter)

Rolled thread	40–5 off
Cut thread	30–10 off
Larger and longer	30 off

MACHINE BOLTS

(½ x 4 inches, hot pressed nuts)

Rolled thread	40–10–5 off
Cut thread	40–5 off
Larger and longer	30–10 off
Cold pressed semifinished hexagon nuts ½ in. and larger	60–5 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	70–5 off
Gimlet and cone point lag screws	50 off

NUTS

Hot pressed, square blank	2.00c to 2.50c off
Hot pressed, square tapped	1.75c to 2.25c off
Hot pressed, hexagon blank	2.00c to 2.50c off
Hot pressed, hexagon tapped	1.75c to 2.75c off
Cold pressed, square tapped	1.75c to 2.25c off
Cold pressed, square blank	2.00c to 2.50c off
Cold pressed, hexagon blank	2.00c to 2.50c off
Cold pressed, hexagon tapped	1.75c to 2.25c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Feb. 18, 1920	Average prices Jan. 1920	Oct. 1919	Jan. 1919
Bessemer, valley, del., Pittsburgh	$43.40	$40.00	$32.00	$33.60
Basic, valley, delivered, Pittsburgh	44.40	39.20	30.40	31.40
*No. 2 Foundry, Pittsburgh	43.40	40.90	33.15	32.40
*No. 2 Foundry, Chicago, furnace	43.00	40.00	31.75	31.00
Lake Superior charcoal, Chicago	57.50	48.75	35.50	38.70
Malleable, valley	44.00	40.35	31.75	32.90
Malleable, Chicago	43.50	40.50	32.25	31.50
*Southern, No. 2, Birmingham	40.00	38.20	30.65	32.25
*Southern Ohio, No. 2, Ironton	45.00	39.50	31.75	31.00
Basic, eastern del., eastern Pa.	40.50	39.75	33.00	33.90
**No. 2X, Virginia, furnace	43.25	41.25	33.40	33.00
*No. 2X, eastern del., Philadelphia	45.35	43.90	35.85	36.15
Gray forge, valley del., Pittsburgh	42.40	39.60	31.80	30.40
Ferromanganese, 80 per cent, delivered	160.00	146.00	110.00	187.25
Bessemer billets, Pittsburgh	65.00	49.60	40.90	43.50
Bessemer sheet bars, Pittsburgh	70.00	53.40	45.00	47.00
Open-hearth sheet bars, Pittsburgh	70.00	53.40	45.00	47.00
Open-hearth billets, Pittsburgh	65.00	49.60	40.90	43.50
Steel bars, Pittsburgh	4.00	3.10	2.425	2.70
Steel bars, Chicago	2.62	2.62	2.62	2.97
Iron bars, Philadelphia	3.75	3.75	2.895	3.295

	Prices Feb. 18, 1920	Average prices Jan. 1920	Oct. 1919	Jan. 1919
Iron bars, Cleveland	$3.75	3.25	3.25	3.25
Iron bars, Chicago mill,	3.50	3.13	2.73	2.95
Beams, Chicago	2.72	2.72	2.72	3.07
Beams, Pittsburgh	3.50c	2.64	2.45	2.80
Beams, Philadelphia	3.75	2.90	2.695	3.045
Tank plates, Pittsburgh	3.75c	3.10	2.65	3.00
Tank plates, Chicago	2.92	2.92	2.92	3.37
Tank plates, Philadelphia	4.25	3.65	2.895	3.345
Sheets, blk., No. 28, Pittsburgh	6.00c	5.00	4.35	4.70
Sheets, blue anld., No. 10, Pittsburgh	5.50c	4.05	3.55	3.90
Sheets, galv., No. 28, Pittsburgh	7.00c	6.35	5.70	6.05
Wire nails, Pittsburgh	4.35	4.25	3.45	3.80
Connellsville furnace coke	6.00	6.00	5.80	4.15
Connellsville foundry coke	7.00	7.00	6.95	5.15
Heavy melting steel, Pittsburgh	28.50	26.50	21.00	16.00
Heavy melting steel, eastern Pa.	25.50	24.45	20.80	15.25
Heavy melting steel, Chicago	24.50	24.25	20.65	14.90
No. 1 wrought, eastern Pennsylvania	37.50	32.90	27.85	25.00
No. 1 wrought, Chicago	30.00	29.00	26.50	16.65
Rerolling rails, Chicago	34.00	33.60	31.15	15.55

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

Pig Iron Market Is More Settled

New Inquiries and Sales Are of Lighter Volume Following Heavy Buying Movement —Automobile Interests Active—$45 Sales at Buffalo and Southern Ohio— Scotch Iron Offered at Philadelphia — New England Embargoed

Chicago, Feb. 17.—In spite of the fact that the leading producer in the Chicago district already has sold the major part of its production for last half, inquiry for that delivery is becoming steadily stronger. The inquiry for prompt and second quarter iron is not as large. Prices are unchanged, Chicago iron being at $43, furnace, for last half and southern at $40, Birmingham. Car shortage still is serious. The northern producer has no iron for sale for first half and is limiting sales for last half. No buyer who is not already on the books of this maker is able to place a contract. The present car situation is such that most furnaces are able to ship about as much as their present production and occasionally to take a small tonnage off the yards. A large melter in Wisconsin is inquiring for 5000 tons of foundry for last half and another Wisconsin consumer for 1000 tons for the same delivery. An agricultural implement manufacturer in Wisconsin is seeking 4000 to 7000 tons of malleable and foundry. A sale has been made of 2000 tons of prompt southern foundry to a Chicago melter. An Illinois agricultural implement manufacturer has closed for 5000 to 6000 tons of foundry for last half. An important melter in Chicago has bought 12,000 tons of malleable for last half at $43.50, Chicago. A Wisconsin steel foundry took 1000 tons of low phosphorus for immediate delivery at $50, Ohio furnace, with the freight more than $4. A sale of 700 tons of prompt foundry was made at $40. It is reported here the Ford Motor Co. has closed recently for about 35,000 tons of foundry iron and 5000 tons of silveries, most of which will come from the South. The Virginia Iron, Coal & Coke Co. is offering a limited tonnage for last half at $42, furnace. The Alabama Co. is also willing to take a small tonnage at the same figure. The Algoma Steel Co. and the Woodward Iron Co. both are out of the market. The Sloss-Sheffield Steel & Iron Co. is booking for first half but is selling only 2.25 and over silicon.

Demand Is Less Urgent

Philadelphia, Feb. 17.—A quieter market in pig iron has prevailed here the past week. Demand is less urgent and the impression is that most of consumers who desired to do so, have covered over the third quarter or the remainder of the year and that those who have not closed are prepared to take their chances on the market later. It is reported that one eastern user bought 5000 tons of basic and that two others bought about 2000 tons each but these reports not confirmed. Most of the past week's business as usual involved foundry iron. The past week's business in eastern Pennsylvania iron was on the basis of $44 to $45 furnace for No. 2X (2.25 to 2.75 silicon) and some No. 2X was sold at less. These prices prevailed both for second quarter and second half. Considerable off-foundry iron was disposed of during the past week for spot shipment. A Buffalo furnace is offering 2000 tons of off-iron based on $45, Buffalo for No. 2 plain (1.75 to 2.25 silicon) in Virginia, only three interests now are selling, one for first half, one for second half and the third for the whole year. The first two makers are about sold up for these positions. Prices on Virginia iron continue based on $42 furnace, for No. 2 plain. The minimum on central Pennsylvania foundry is $42 furnace for No. 2 plain. The Stanley G. Flagg Mfg. Co. has an inquiry out for basic and bessemer and a New Jersey consumer wants 5000 tons of basic. A round tonnage of bessemer was sold to an eastern consumer at higher than $44 delivered. Considerable off-grade, copper-bearing low phosphorus has been sold at $45 furnace. No business is reported in standard low phosphorus, gray forge or malleable.

English Prices Near Domestic

New York, Feb. 16.—Prices at which Scotch foundry iron now might be bought for shipment to this country are much closer to domestic prices than was the case a month ago, according to cable advices received by the trade here. During the past week inquiries have resulted in offers of No. 1 Scotch foundry at $46.60, delivered Philadelphia, for March-April shipment, and of No. 3 at $45.75, delivered Philadelphia, for similar delivery. Some Scotch hematite with phosphorus around 0.06 maximum, may be had at $45, Philadelphia. The prices on Scotch foundry iron are just about equal to the Philadelphia delivered price on equivalent eastern Pennsylvania iron.

The severe weather and the car shortage are having a very adverse effect upon furnace operations and on deliveries. Several eastern furnaces are banked for lack of coal. The Bethlehem Steel Co. has only one of its Lebanon furnaces operating. Foundries in several cases are embarrassed by the various embargoes, and by failure to receive iron.

Cabled news dispatches describe the English pig iron market as very excited, due to the fact that both Scotch

and English makers are sold up. It is not known where the buying originated, but it is presumed, it was for export to Continental Europe, since earlier cables spoke of big continental demand for pig iron. As a result of the sold up condition in England, it is expected by the trade here, that considerable buying will be induced in this country, as some buyers will have to obtain the tonnage regardless of the exchange situation.

Shipments to Boston Tied Up

Boston, Feb. 16.—A freight embargo has tied up shipments of pig iron to New England points, and today the only possible way for shipments from outside New England to reach consumers is by water. So far no rail and water shipments have been reported from the Alabama field but sales recently were made with this routing intended. Despite the freight embargo and the heavy selling of previous weeks, sales last week continued fairly heavy. An eastern Massachusetts textile machinery manufacturer bought 2000 tons of 2X Virginia iron (2.25 to 2.75 silicon) at $43.25, furnace, or $47.95, delivered, for last half. A Massachusetts machine tool manufacturer bought 1000 tons of 2X iron, and several general foundries throughout the state placed orders ranging from 500 to 1500 tons. A Connecticut consumer bought 500 tons of malleable at $47.70, delivered. The fact that many furnaces already booked to capacity for first half are not producing as much as expected has led consumers to place orders in excess of requirements, and this may explain the continued buying movement. Iron for first half delivery is exceedingly scarce and what little is available is selling, for the best grade, at approximately $45, Buffalo furnaces; $44, eastern Pennsylvania furnaces; $42 to $43, Virginia furnaces, and $41 to $42, Alabama furnaces. One western Pennsylvania furnace has been selling rather heavily for last half at a base price of $45, which indicates that the market is strong. Spot iron has brought a high as $62.50, delivered, for the 2.25 to 2.75 silicon grade. Many smaller foundries are reporting that they have but a few weeks' supply of iron on hand, and there seems to be no immediate prospect of relief.

Prices Still On Rise

Cleveland, Feb. 17.—While inquiry in general has fallen off somewhat, the continued rise of pig iron prices testifies to the extent of the unsatisfied demand and the fact that many consumers still are bidding for tonnage wherever they can find it. Actually it is known that a number of the larger consumers did not take part in the recent buying movement for last half which has filled the bulk of the capacity to the year-end of various makers in Cleveland, northern Ohio and lake territory. Two large automobile interests in the Detroit district are in the market, one of them is out for 15,000 to 20,000 tons of malleable and foundry for third quarter, and the other, a manufacturer of automobile engine castings for about an equal amount. The General Electric Co. several days ago inquired for 4500 tons of malleable and foundry for second quarter for Erie, and it has since come out for a new inquiry of 6500 tons of similar grades for the same plant for third quarter. This consumer has closed for part of all of its second quarter needs and is understood to have paid $45 Buffalo for at least part of this. One selling interest in the week disposed of about 12,000 tons of foundry and malleable at $42, a higher price for the base grade. Some of this was malleable for Cleveland delivery at the delivered figure of $42.40. Small lots of malleable have brought $44 valley. Cleveland furnaces are selling cautiously at present with $42 base representing the last transactions. Southern Ohio makers are naming $45 furnace base and have been making sales for early shipment at that level, or a delivered price of $47.40 into this territory. Some southern Ohio interests now are quoting this price for last half. Nothing further has developed in basic except that the American Steel Foundries which recently was inquiring for from 10,000 to 15,000 tons for second quarter for Sharon and Alliance is understood to have placed this business with Pittsburgh interests. Part of this tonnage went at $40 on an old quotation and part at $43. Valley makers of standard low phosphorus have sold several lots involving considerable tonnage at $49, furnace. They also have booked some new business on outstanding quotations at $48 furnace. Foundries in this territory continue to suffer from the shortage of coke and their operations are expanded or contracted daily as shipments of fuel arrive. The second stack of the Cleveland Furnace Co. which has been undergoing repairs and relining is expected to blow in this week.

Lull Develops in Demands

Pittsburgh, Feb. 17.—Trading in the pig iron market here has dwindled materially in the past week but as the falling away in business has been unaccompanied by any easing in prices the general inclination of the trade is to look upon the decrease in sales merely as the lull which unusually follow a period of activity. A considerably more conservative attitude, however, is observed on the part of melters, which in the lack of more plausible reasons is ascribed to the weakness of the stock market, the foreign exchange situation and the unsettled state of affairs in regard to the railroads. The question has arisen in buyers' minds whether prices have not gone high enough for the present and since none of them is suffering for want of iron, notwithstanding the most deplorable transportation situation which has existed for several years, an inclination to defer purchases of future requirements is noted. With the coke supply still deficient and nowhere nearly enough cars to make full shipment of iron in contracts, consumers are obliged to make rather frequent purchases but they appear to have no difficulty securing these tonnages although they have been obliged to pay comparatively stiff prices for the foundry grade. Recent business in this class of iron has been general at $42 to $43, furnace, for No. 2 (1.75 to 2.25 silicon). Inquiries for basic iron aggregating about 50,000 tons for last half shipments still are uncovered and probably will be deferred until the general business situation is a little less confused than at present. Sales of this grade in excess of 20,000 tons were made in this market in the week ending Feb. 14, all at a price of $43, valley furnace, the iron being chiefly for second quarter delivery. It is understood that a bid of $44 since has been declined on a substantial tonnage and some producers are quoting $45 against new inquiries. Nothing important has been done in bessemer iron since the recent sales aggregating about 2500 tons for second quarter shipment were concluded at $42, valley furnace. Sales of malleable are noted at $42 and $44, valley furnace, but the market on this grade is more properly quoted at the higher figure, as the iron which sold at $42 ran high in manganese. Sales of low phosphorus iron, aggregating about 3000 tons is noted for delivery over the remainder of this half of the year from the valley furnace at $48. This furnace interest now is well sold over the first half of this year and is quoting $49, furnace, against new inquiries. The Bessie Furnace Co., New Straightville, O., has made no change in its price of silveries, still quoting at $50, furnace, for 8 per cent grade.

$45 Price Is Obtained

Buffalo, Feb. 17.—An inspection of this market shows that the $45 base price for foundry iron now is an accomplished fact and it can be stated definitely that no more new iron will be sold in this district lower than that price, provided present conditions continue. But little iron is being sold in this district at this time. Three furnaces have announced themselves out of the market except on small accommodation tonnages. It is probable that not more than 12,000 tons of iron of all grades were sold in the district last week. All of it was for second half and all the foundry iron went at the $45 price for No. 2 plain, (1.75 to 2.25 silicon); $46.25 for No. 2X, (2.25 to 2.75 silicon), and $48 for No. 1X (2.75 to 3.25 silicon). One furnace sold 7000 tons of foundry at these prices, most of which was 2X at $46.25. Some high silicon iron ranging from 3.25 to 3.75 silicon was sold by this furnace for $50. Another furnace which still is quoting and is the only one now said to be open for contracts, has raised its price on basic to $44 and took a 2500 tonnage at this figure for third quarter. This furnace announces that it could sell any tonnage it has but is holding out some of this capacity to insure delivery of iron already sold. The interest which sold 7000 tons says it could easily sell about 50,000 tons which is the unsold capacity it now has, but it is also holding this tonnage for insurance.

The Susquehanna furnaces are definitely out of the market for the balance of the year, having no tonnage to dispose of. A furnace which last week sold some accommodation tonnages at $45 base reports that most of its shipments now are being made on contracts made at $38 to $40. Re-

ports that a tonnage of No. 2 plain was sold by a Buffalo furnace to an eastern consumer last week for $42.25 are unfounded. The iron which amounted to between 1000 and 2000 tons was sold three weeks ago at $43.25.

Sells Lot of Basic

Youngstown, O., Feb. 17.—A valley maker sold 2000 tons of basic within the week to a nearby consumer at $40, furnace. Shipment will be made next month. The tonnage was sold on account of its being in excess of the maker's melting requirement.

Differ on Market Views

St. Louis, Feb. 14.—Opinions vary broadly as to the status of the pig iron market. In certain quarters it is said demand for all deliveries is urgent, with prices advancing. Elsewhere it is stated that iron is plentiful, especially for last half delivery, and that prices are unchanged or lower. An important southern producer reports cancellations of orders, and a slowing down of sales. One of the largest dealers said today that demand is aggressive for both spot and last half delivery. Prices for Ohio iron, he said, are $2 higher, while southern iron is up $2 to $2.50. The supply for delivery before July 1 is exceedingly short, some grades being virtually impossible to get. Booking for the last half has been heavy, and it is possible to dispose of every ton of iron deliverable with reasonable promptness. This statement, however, differs radically from that of the representative of a leading Birmingham furnace, who says his customers appear much disconcerted by the unfavorable conditions in general. His company, he says, will have ample iron to sell for second half, and it has not disposed of all its make for the second quarter. He is quoting $40, Birmingham, for second half, for No. 2 southern iron (1.75 to 2.25 silicon), and would sell for earlier shipment on the same terms. Apparently there is still a good, scattered demand, with prices about steady. No big inquiries are before the market, but there are a fair number ranging from a few cars to 2000 tons.

Steady Selling in South

Birmingham, Ala., Feb. 17.—Steady selling of pig iron still is noted in the Birmingham district, although delivery is being limited to the first half. Quotations are on a basis of $40 per ton for No. 2 foundry (1.75 to 2.25 silicon). No more orders are being taken for last half delivery, even at $42, which was the figure some interests were naming. Some of the iron which was sold at $42 for last half delivery will go to Wisconsin. Chicago selling agencies are against actively inquirying for southern iron. Inquiries are numerous. Production in Alabama is about equal to what it was in January. The railroad car shortage is interfering with shipments out of this district, but local consumers are taking deliveries freely and accumulated stocks are being reduced. Furnace companies are waiting for the lifting of embargoes to the East and will ship a considerable tonnage. Alabama charcoal iron has been advanced $5, now being quoted as high as $55, furnace, with the demand growing.

Slight Gain in Coke Output

Recurrence of Stormy Weather, However, Expected to Increase Car Shortage—Consumers Paying $7 Minimum for Furnace Grade

Pittsburgh, Feb. 17.—Production of beehive oven coke made a moderate gain last week as a result of a larger supply of cars, but the shortage has not been relieved. With a recurrence of wintry weather, which is likely to tax railroad facilities, the gain of the past week probably will be canceled this week. The coke car allotment for the Connellsville district yesterday was 60 per cent, while for today it was 40 per cent. Traffic conditions in Buffalo and along the lake front have been so bad the past few days that a decided tapering off in the car supplies for the remainder of the week is likely. Some coke billed for Buffalo is being diverted to other districts because of the improbability that it could get into Buffalo. Shipments of coke against contracts are in keeping with the production, or slightly in excess of 50 per cent. This renders blast furnace operations somewhat uncertain but suspensions on account of insufficient fuel supplies are few, although some furnaces are being banked occasionally for a day or more to conserve the supply. Supplies of coal cars are even smaller than those for coke, and with the steel companies unable to increase the operations of their by-product plants, they still are in the market for beehive oven coke. Discussion of the validity of the coke contracts carrying prices above the government maximums has quieted considerably. Most producers are invoicing shipments at the contract prices rather than that named by the government. Some disposition is noted in the Connellsville regions to ignore the fuel administration regulations on spot supplies. Consumers claim to be unable to obtain furnace grade at $6 and that $7 is the minimum. It is rumored but cannot be confirmed that some operators have offered to sell spot coke on a basis of 1 to 5 on the price of valley basic pig iron. More or less trading of coal for coke and coke for coal and coke for pig iron still is reported. Connellsville production of coke for the week ended Feb. 7, is estimated by *The Connellsville Courier* to have been 239,944 tons, against 241,935 tons in the previous week.

Famine in New England

Boston, Feb. 16.—The outstanding feature in the coke market is the lack of any coke supplies whatever for sale. Embargoes prevent any Connellsville or New Jersey coke from coming in and the Providence, R. I., and Everett, Mass., by-product producers are both out of the market for any delivery, so that dealers in many cases have had to turn away customers. The car shortage due largely to the severe weather conditions has tied up delivery of coke on contract and the coal scarcity is adding to the general tightness in the coke situation. Foundries as a rule are fairly well supplied, but delays in deliveries are causing much concern. Some consumers are on the point of closing their plants. Reports of some spot deliveries from one consumer to another indicate that price is not a factor in the market.

Sells in New Territory

Philadelphia, Feb. 17.—The New England Coal & Coke Co. has withdrawn from the market after selling considerable by-product foundry coke in this district for remainder of the first half at $10, ovens, plus freight of around $5 to this district and of $5.50, Baltimore. This interest never before has been a factor in this district and its selling here has resulted from the inability of consumers to get coke from regular sources.

Scarcity is Increasing

St. Louis, Feb. 14.—A growing scarcity of coke is reported, while inquiries are heavy. Many melters are in urgent need of supplies, and must get them soon or reduce operations. Production and railroad equipment are barely sufficient to meet contract requirements. There are many complaints of delayed shipments, and diversion of cars in transit. The leading by-product interest continues to produce at about capacity. Smelters in the South and Southwest are the most seriously affected.

To Increase Southern Output

Birmingham, Ala., Feb. 17.—Demand for coke continues unabated, furnace needs being crowded by commercial business, foundries and machine shops and smelting plants elsewhere. The output in this district will be largely increased soon. The 50-oven plant of the Birmingham Coke & By-Products Co., at Boyles, near Birmingham, will be started Feb. 25, and the output has been sold for a considerable time ahead. The new 120-oven plant of the Sloss-Sheffield Steel & Iron Co., and the 77 by-product ovens at the Fairfield plant of the Tennessee Coal, Iron & Railroad Co. will not be finished before 60 days. Beehive ovens are working on full time. The railroad car shortage is interfering with shipments.

Stacks In and Out

No. 3 blast furnace of the Youngstown Sheet & Tube Co.'s East Youngstown group has been blown out for relining and general repairs. No. 2 furnace at the Hubbard, O., plant was blown in thus giving the company five active stacks. At the coke oven plant four of six batteries are coking.

At the last meeting of its board of directors it was decided to increase the capital of the American Iron Products Co. Inc., 107 Liberty street, New York, from $100,000 to $200,000. This will enable the company to expand its foreign business.

Sheet Bars at High Point

Pittsburgh Reports Sales at 4.75c—Chicago Mills Practically Out of Market — Bar Iron $5 Higher at Pittsburgh

Chicago, Feb. 17.—With only a sufficient exception to prove the rule, steel mills in the Chicago district are out of the market. This is almost absolutely true as to first half delivery and practically the same condition exists as to second half business, as neither important producer is willing to book anything for second quarter specification or last half delivery. However, it seems probable that present pressure on the part of buyers who desire to cover their requirements for the latter part of the year will force selling for that delivery within a short time, possibly by March 1. While inquiry for almost all lines of steel is heavy, many consumers who have been in the market are not now active, having exhausted their resources fruitlessly. In the absence of selling, nominal quotations are all that can be obtained and soft steel bars are nominal at 2.62c to 2.87c. The latter figure applies on shipments against contracts on which prices ruling at the time of delivery were to be used.

Bar ironmakers are selling nothing under 3.50c and some tonnages are being booked at 4.50c. Inquiry is heavy and mills are booking considerable tonnage, but are becoming heavily loaded and probably will curtail further in a short time. Railroads are buying better than in the past and are specifying heavily against their commitments. Much inquiry is being turned down without quotation.

Hard steel bars rerolled from rails are being quoted now at 3.50c, Chicago, on material which will be delivered probably during second quarter. On February shipments 3.25c, Chicago, is being invoiced. Demand is heavy. Reinforced concrete builders actively are seeking material, while nothing better than 16 to 20 weeks' delivery can be promised.

Can't Locate Tonnage

New York, Feb. 17.—It is exceedingly hard to place orders for steel bars here, and it is understood that during the past few days, certain large buyers considered themselves extremely fortunate in being able to purchase small tonnages at 3.50c, Pittsburgh.

Prices Show Wide Range

Philadelphia, Feb. 17.—Steel bars continue very hard to get but the leading interest as well as most of the independent companies occasionally are making exceptions of small lots which are vitally necessary to the consumer. On these the prices range as a rule from 2.35c to 3.25c, Pittsburgh. One maker during the past week has sold a round tonnage for delivery in four to five months at 4.00c, Pittsburgh.

Spot Tonnages Near 5.00c

Pittsburgh, Feb. 17.—Demands for early tonnages of merchant steel bars apparently are insatiable in view of the fact that makers in a position to accept orders for reasonably early delivery have in the past week taken some business as high as 4.75c, base, Pittsburgh. Few of the independents which are in the market are obliged to sell for less than 4.00c base, for that price freely is offered by users who must have supplies in the next 30 to 60 days. Larger makers both here and in the valley practically are out of the market on new business, though occasionally taking on a little business from regular customers on a basis of prices at time of delivery. It is the small and nonintegrated makers of bars who are taking the bulk of the premium business and with rerolling billets bringing $60 to $65, they claim justification for bar sales at 4.00c, base, or higher. Sales of concrete reinforcing rolled from shell steel billets are noted up to 4.25c, mill. Prompt forging bars are not to be had much less than 4.25c. Bar iron makers here again have advanced prices $5 per ton, to a base of 4.25c for the Pittsburgh grade of common bars. Makers are booked several months ahead and are taking no orders from new sources and only a part of the tonnages offered by regular customers.

Wants Tonnage of Reinforcing

Cleveland, Feb. 17.—A local interest identified with the concrete reinforcing industry has inquired for 10,000 tons of reinforcing bars for second and third quarter. Some of the producers are unable to quote upon this business but at least one is known to have named a figure of 4.50c, mill. This price is higher than some of the rerolled bar makers will quote, although most of the latter with orders on hand to take up several months's production are avoiding new business. Some of the latter still will quote 3.50c, mill, to regular customers. A Cleveland job requiring 2000 tons of reinforcing bars is up for figures and also a Tampa, Fla., contract calling for 800 tons. The strong situation in steel bars continues and demand appears as intense as ever. Any offerings quickly are snapped up and those for early shipment are bringing fancy prices. One mill in this territory rerolling from billets bought in the open market, is said to be quoting 4.25c, Pittsburgh.

Big Premiums on Prompt Supplies

Pittsburgh, Feb. 17.—Makers of cold finished steel in a position to accept early delivery business still report no difficulty in making sales anywhere from 4.60c to 4.95c, base, Pittsburgh and some fairly large transactions have taken place recently within those limits. Some of the larger producers occasionally are slipping in a little extra tonnage from regular customers on a basis of 3.85c, base, but price at time of delivery is the more common practice on new orders. Demands for stock, 1-inch and smaller and for bessemer screw stock are heavy from the automobile makers.

$225 Bid

On Lots of Early Ferromanganese—English Sold at $150 to $155

Pittsburgh, Feb. 17.—Although a price of $200 has not yet been established for 76 to 80 per cent ferromanganese by sales in this district, it is doubtful if any prompt tonnages could be had for less and one dealer here reports having declined a bid of $225 because of his inability to secure the tonnage. The market appears to be sold to a standstill in this material and meanwhile quite a few inquiries are coming out for small lots from consumers who have not been getting full shipments against contracts. Domestic makers are hampered by the lack of cars for shipments and production is falling behind somewhat because of the scarcity of coke. One English producer still is quoting $150, c.i.f. Atlantic seaboard, for 76 to 80 per cent material for last half but no business can be accepted by the American agents of this producer, except subject to confirmation.

Early tonnages of spiegeleisen also are scarce with one large maker quoting $56.25, furnace, for 19 to 21 per cent material for first half shipment. This quotation, however, does not mean much as the company naming it has no tonnage to speak of available for first half shipment.

On last half tonnages this company is quoting $60. Sales of 500 tons of 50 per cent ferrosilicon for shipment in equal monthly tonnages starting with March is noted at $80, furnace, freight allowed. This is the only business of importance recently concluded in this alloy, most consumers being well fortified against their immediate requirements and to a large extent out of the market.

The recent advance in bessemer ferrosilicon announced by some of the Ohio makers has not been followed by the Bessie Furnace Co., New Straitsville, O., which continues to quote $59.50 furnace, for 10 per cent.

More English Ferro Sold

New York, Feb. 16.—About 2000 tons of English ferromanganese have been sold during the past week at $150 to $155, c.i.f. tidewater, mostly for shipment in the second half. A limited tonnage for August shipment from England is obtainable at $155, tidewater, and one importer now is asking $165, tidewater, for May-June shipment from England. It is not certain whether any more English ferromanganese might be had at the $150, tidewater, price. About 500 tons of domestic ferromanganese have been sold during the past week at $160, delivered, for last half. One sale of a spot car of ferromanganese during the past week has been made at $180, while in another case a spot carload was sold at $200, tidewater.

Sales of 300 to 400 tons of spiegeleisen have been made during the past

week at around $58, furnace, for 20 per cent. Demand for spiegeleisen is quiet.

Advances Price to $175

Philadelphia, Feb. 17.—While domestic ferromanganese was sold during the past week at $160 for the second half, one maker has advanced his price on this position to $175.

Ferromanganese in Demand

Chicago, Feb. 17.—Strong demand is current for ferromanganese for prompt delivery and it is impossible to place this business with makers as they are entirely sold up for the greater part of the year. Some sales of resale material were made recently at $200. On such contracts as can be made for last half the quotation is $160 to $170, furnace.

Storage Limit

Approached Among Wire Mills—Reject Practically All New Business

Pittsburgh, Feb. 17.—Makers of wire and wire products still are obliged to store the greater part of their production because of the scarcity of cars for shipment and some of them are so near the end of their storage room that suspensions are likely before the end of this week. Immediate increase in the supply of rolling stock might avert this condition, but that is unlikely owing to the fact that weather conditions over most of the country are such as to seriously interfere with railroad operations. Schemes for the use of open top cars have been considered but have not been adopted owing to the high cost entailed in making the conversions to make the cars weatherproof. Demands still are numerous and large, with most makers obliged to turn down practically all of the new business offered because of present shipping and production conditions. The leading interest is understood to be still offering to take orders for nails at $3.25 per keg, base, Pittsburgh, if jobbers will agree to sell them at the old margin of profit.

Transportation Continues Bad

New York, Feb. 16.—Transportation conditions affecting the wire business in the east continue deplorable. Not only is there a congestion at plants due to inability to ship finished products, but there is the daily likelihood that operations at wire mills may have to suspend in case sufficient fuel is not received.

Car Lack Piles Nails

Chicago, Feb. 17.—With production increasing steadily at wire and nail plants, a larger volume of products is being turned out, but lack of sufficient cars is preventing shipments in equal degree. A large tonnage is now awaiting shipment, including all forms of wire and nails. Buyers are clamoring for all of this tonnage but it cannot be moved until more equipment is furnished. At some points the car situation has improved, releasing an increased quantity of wire but at some other points the car supply is still far from sufficient.

Coal Is Affecting Plates

Eastern Mills Forced to Shut Off Steel Capacity—Railroads Placing Round Tonnages—Inquiry for 37,000 Tons Current

Philadelphia, Feb. 17.—As in other steel products, the acute coal situation is the controlling factor in plates in the East at present. One large eastern Pennsylvania maker has been obliged to shut down 20 of its 22 open-hearth furnaces because of a shortage of coal and other raw materials. While the plate mills of this interest have been running they have been using up stock ingots. If the coal situation does not improve it will mean a greater scarcity of steel than yet has been seen. Railroad inquiries for plates for car repairs continue an important factor. The disposition among sellers to get top prices does not seem so marked and 4.00c, Pittsburgh, represents the top of the market. Although the mills are turning away most of the tonnage offered because of their inability to see their way clear to furnish it, some business has been placed at various prices below 4.00c. There continues an active demand for ship plates and there is another wave of inquiry for ship steel from Japan.

Railroads Place Tonnage

New York, Feb. 17.—Although there is no apparent weakness in the demand for plates in this district, this class of materials is easier than in other sections. Prices as high as or higher than 4.00c, Pittsburgh, have failed during the week to attract any of the important business closed, except where requirements were of a very special character. Quite a large tonnage of plates was closed here during the week at 3.25c to 3.75c, Pittsburgh.

Prompt Tonnages Not Easily Placed

Pittsburgh, Feb. 17.—Makers of plates in this district appear to have about all the business they can attend to over the next few months and are rather indifferent about new orders, even at higher prices. While the Carnegie Steel Co. has announced no change in its quotation from 2.65c, Pittsburgh, it is taking no business carrying specific delivery at that base and the independent companies which have shown a disposition to follow the lead of the leading interest in the matter of a price policy, either are declining new orders or booking them on a basis of price at time of delivery. The companies which are open for business for early shipment are not quoting below 3.25c, while 4.00c is the general price notion of a number of them. Lack of cars and of steel appears to be interfering considerably with production and accumulation of old orders is not being reduced at all rapidly.

Sell Railroads Lower

Youngstown, O., Feb. 17.—Bookings of plate mills here for the present quarter are heavy and considerable business for next quarter is being taken on. Sales made recently include several large tonnages of light plates to the railroads at a price said to be 3.50c base Pittsburgh. Considerable domestic business was closed last week at 3.75c base Pittsburgh. Sales of plates at mills here last week approximates close to 10,000 tons.

Market Bare of Plates

Chicago, Feb. 17.—Neither the leading interest nor the leading independent is able to take any business in steel plates and inquiries for this material to apply on definite projects are being met by refusal.

Car Business

Being Quietly Negotiated with Builders—Railroads Favored by Mills

Chicago, Feb. 17.—With the return of railroads to their owners a matter of only a few days, practically nothing is being done in the way of inquiring for or placing orders for cars or other equipment. The only exception to this rule is that large tonnages of track fastenings are desired and inquiry along this line is heavy, although mills are unable to take on any of this business. Rail buying seems to be at an end for the present and mills are not able to take much further business in light rails.

The Great Northern railroad has not yet closed on its inquiry for 1000 ore cars, but this business is expected to be placed during the present week. The Union Pacific railroad is inquiring for 65 chair and baggage cars, involving 1500 tons of steel, and 45 cabooses requiring 200 tons of steel. The Pittsburgh railways is asking bids on 150 motor cars requiring 750 tons of steel.

The attitude of steel mills is to favor railroads in every way and give them a sort of limited priority.

Offer Ward Department Rails

Pittsburgh, Feb. 17.—Prices are practically everything in track material and are still showing a stronger upward tendency. All makers of standard rails temporarily are out of the market on new business pending the completion of the recent railroad administration order. Offerings of the rails recently sold by the war department in New York at a price of $41 per ton are being made here at $55 by the dealers who secured them. These rails, originally ordered by the railroad administration subsequently were diverted to the war department for use in France but the war ended before they could be shipped. The leading interest is accepting no new business at present in light rails and with the bulk of the inquiries of necessity going to the independent companies whose price is 3.00c on domestic business and 3.50c on export orders, middle basis exist for the old price of 2.45c mill.

Scrap Trend Downward

More Market Weakness Develops and Steel and Cast Grades Drop $1 at Chicago—Pittsburgh Prices Soft—Railroad Offerings Light

FOR COMPLETE SCRAP PRICES SEE PAGE 598

Chicago, Feb. 17.—Weakness which was evident in the scrap iron and steel market 10 days ago is still noticeable and in the absence of much buying, quotations largely are nominal. However, just sufficient material is moving to give some idea of the trend, which is slowly downward. The situation is strong at bottom, and it is apparent that as soon as buying is resumed prices may be expected to rebound. Steel grades have fallen off at least $1 per ton, and in some instances even more. Cast scrap, which has been the strongest item in the Chicago market, has declined about $1, as a result of less buying rather than because of increased supplies. Most foundries have bought freely and are fairly well provided with stock for the immediate future. Quotations on rerolling rails are held up fairly well as nothing in this line is being offered and mills are desirous of obtaining further tonnage. Railroad offerings of scrap are steadily under normal and this source is not yielding anything like its usual tonnage. The Northern Pacific offers 1180 tons, the Chicago, Milwaukee & St. Paul 500 tons and the Chicago, Burlington & Quincy 250 tons of plate scrap.

Car Situation Handicaps Boston

Boston, Feb. 16.—Heavy melting steel scrap has further weakened, due largely to the railroad situation. The New York, New Haven & Hartford railroad is scarcely able to handle any scrap from Massachusetts. Shipments from the Boston district to Pennsylvania by way of the Boston & Albany railroad take a higher freight, which means that scrap must be sold lower in order to meet Pennsylvania prices. A shortage of cars has caused cast grades to remain firm, slight advances even developing in some localities. Malleable has been in considerable demand and a sale of 1000 tons is reported to a Connecticut consumer. Maine scrap has been coming into the Boston and Worcester markets in greater proportion than usual because cars have been plentiful on the Boston & Maine railroad. One order of 500 tons was sold delivered to consumer at Worcester at $40.50, and other smaller lots have been sold as high as $41.50. Prices in most grades remain unchanged.

Some Liquidation

Philadelphia, Feb. 17.—The weaker tone in scrap recently brought about in this district by the efforts of some important dealers to liquidate their holdings has not entirely disappeared. Such liquidation continues and involves practically all the principal grades except cupola cast. While the opinion is held in some quarters that the liquidation was induced by a feeling that market would be easier two months from now, it is certain that calling of loans by banks was a factor in some cases. There now are offerings of some grades which are not finding takers. Quotations on melting steel, frog, switch guard rails, wrought pipe, turnings and borings are lower while low phosphorus, railroad and yard wrought, cupola cast, car wheels, stove plate, grate bars are higher. Railroad wrought is very scarce.

Prices Still Are Rather Soft

Pittsburgh, Feb. 17.—Although the open-hearth grades of scrap iron and steel are holding at about the prices of a week ago, the steadiness is more apparent than real. It is only because of a lack of sales upon which to base them that lower prices are not quoted. Practically all of the steel companies in this and the valley districts are out of the market at present and on account of the railroad situation, only a few of them are taking in all of the material coming to them on contract. Not only these conditions, but the weakness of the security market is disturbing to the dealers, who if they could interest melters, would accept somewhat less than quotations to effect sales. Most of the dealers have fairly heavy stocks on their yards at present and the steel companies are much in the same position. One dealer is reported to have between 40,000 and 50,000 tons on his yard, while a Pittsburgh district steel company has about 20,000 tons of machine shop turning laying on its yards. The market remains strong on cast scrap of all sorts, for this kind of material is not at all plenty and the demand is steady. Cupola cast is especially scarce, for the steel companies are taking much heavy breakable grade and paying a price that is quite as remunerative as that broken up into cupola size. The market also holds up well on the specialties, though consumers report somewhat more urgency on the part of sellers to market cast-iron axles. Rerolling rails are bringing $36 to $37, delivered to plants outside the Pittsburgh district and are much above what can be obtained here.

Market Still Sluggish

Buffalo, Feb. 17.—The market is in slightly improved condition over last week, but it still lacks the essentials of an active situation. Within 10 days, dealers believe, a fair-sized buying movement will be in progress. Eastern Pennsylvania mills even now are inquiring and are actively interested in heavy melting steel and turnings. There is a shortage of cast scrap, stove plate and car wheels. Dealers with this material could practically obtain their own prices. Dealers are endeavoring to get out tonnages already sold and are having their time taken up by difficulties of transportation. The car shortage has not noticeably improved and labor is still at a premium. The only change in price is in stove plate which is now being quoted at $30 to $31.

Cleveland Market Softer

Cleveland, Feb. 17.—Scrap iron and steel in the Cleveland district is a trifle softer than last week. Melters continue out of the market, owing to their heavy stocks and commitments, and the only trading done is between dealers. More uncertainty among dealers is apparent this week than last. Heavy melting steel has fallen to $26 to $26.50, a loss of 50 cents. Short steel rails, large drop forge flashings and cast iron borings also have been marked down. Cars are extremely scarce, and dealers are encountering much trouble moving contract scrap. One local melter is rejecting a great deal of scrap at present, causing much dissatisfaction.

Prices Slump at St. Louis

St. Louis, Feb. 14.—The market for scrap iron and steel has been thoroughly demoralized and yard interests and dealers are striving to liquidate. During the week transactions have been in enormous volume, and much of the material purchased was for shipment to points to the East. One brokerage interest alone took close to 10,000 tons, virtually all of which was for shipment outside the district. Not long ago cast iron, car wheels, grate bars and stove plate were almost unobtainable. Now liberal tonnages are being offered, and at sharply reduced prices. There has been a sharp downward revision in dealers' lists affecting all important grades. Holding stocks with the banks asking 8 per cent for money, and calling loans, is not attractive, and interests not well supplied with financial resources are rushing to sell. Fundamental conditions, however, have not changed. The mills are buying and consuming heavily, and the same is true in an even more marked degree of cast iron foundries. Steel scrap is in demand, with melters anxious to accumulate large supplies. The only railroad lists before the market were one from the St. Louis Terminal Railway association for 339 tons, and one from the Wabash for 900 tons.

Quotations Revised in South

Birmingham, Ala., Feb. 17.—Quotations on scrap iron and steel in the South have been revised, mainly upward. Dealers are still apprehensive as to the future, and in some instances find themselves short on tonnages for contracts, with an uncertainty as to what price they will have to pay for the material. Consumers of heavy melting steel are not buying liberally and this has had an effect of lowering the price slightly. Freight differentials are too great to make it possible to enter markets in other centers with southern scrap.

Chain Prices Move Up

Pittsburgh, Feb. 17.—The United States Chain & Forging Co. and the American Chain Co. have advanced prices $10 per ton to a base of 6.25c for 1-inch proof coil. This action

duplicates that of a Columbus, O., maker, who a month ago put out a new list calling for 6.25c, base. The new list makes an even greater advance in iron chain. The extra over proof BB and BBB coil chain, which formerly was $1.25 per 100 pounds for all sizes from ⅝-inch to 1¼ inches, and $1.50 for ⅛ and 9/16-inch and for 1⅛ and 1⅛ inches, now is $2.50 for all sizes from ½-inch to 1¼ inches. Under the old schedule, 1-inch iron chain ranged from 8.00c to 8.25c, while the new list brings the range to 9.75c to 10.25c, or $35 to $40 per ton advance.

Big Lots

Of Cast-Iron Pipe Wanted by Chicago—Prices Now Higher

Chicago, Feb. 17.—As indicated by recent quotations, which were somewhat the prevailing level, an advance of $3 per ton has been made on cast iron pipe in this district. This makes the new figure $72.80, Chicago, on 6-inch and $75.80 on 4-inch pipe. At the same time specials were advanced $15 per ton or ¾ of a cent per pound. Bids were opened yesterday at Chicago on 4650 tons, and at Elmhurst, Ill., on 1279 tons. Chicago will open bids Feb. 19 on 15,600 tons additional. Battle Creek, Mich., opened figures Feb. 14 on an indefinite tonnage to cover the season's requirements. Kansas City, Mo., which took figures recently on 2640 tons of 48-inch pipe has decided not to buy. The United States Cast Iron Pipe & Foundry Co. has taken 2630 tons at Akron, O., 1100 tons at Sioux City, Iowa, and 500 tons at Rockford, Ill.

Demands Seem Less Urgent

Pittsburgh, Feb. 17.—Though makers of mill pipe still are turning down considerably more business than they are accepting, it has been the experience of some of them that the demands are not quite as numerous or as urgent as they were recently. Apparently, distributors of oil well and line pipe have come to a realization that it is futile to try and obtain something that does not exist, or are satisfied that the manufacturers are doing the best they can to meet their obligations. At any rate, demands have lost some of their recent feverishness. All makers are having trouble in making shipments because of the scarcity of cars and cases are quite numerous where western shipments have been made in cattle cars in the absence of the class of rolling equipment ordinarily used. Movement letup is observed in the demand for boiler tubes.

Cast Iron Pipe Advances

Birmingham, Ala., Feb. 17.—With considerable business coming in for cast iron pipe for delivery during the next few months, announcement is made of another advance of $3 per ton on prices. Four-inch pipe is now quoted at $69 and 6-inch at $66. The melt of iron by southen pipe plants is greater than in any previous winter. Sanitary pipe plants are working at full capacity.

Sheet Output Narrowed

Shortage of Cars and Steel Still Exerting Restrictive Influence—Eastern Shipments Backing Up at Valley Mills Due to Embargo

Pittsburgh, Feb. 17.—Shortage of cars for the shipment of finished sheets and a shortage of steel due to a lack of sufficient railroad and transportation facilities, continue to narrow the activities of the sheet mills. While the American Sheet & Tin Plate Co. has more than 80 per cent of its sheet mills in operation, current production is not higher than 70 per cent of normal because the irregularity of the supply of steel means rather frequent mill lapses. Conditions with the independent manufacturers are no better than they are with the leading interest, and it cannot be said that a great deal of headway yet has been made in the direction of cutting down the business backed up by the labor and fuel situations of the last quarter of 1919. Demands for sheets, especially on the part of the automobile manufacturers, continue numerous and insistent and about the only way that early tonnages can be obtained from the leading interest is by the buyers providing the sheet bars for conversion. Independent manufacturers appear willing to take on some business calling for delivery over the next 60 or 90 days from which they are obtaining extremely fancy prices. Buyers in need of early tonnages apparently figure that it is just as cheap to pay 6.00c a pound or more for black sheets, above 7.00c for galvanized and 6.00c for blue annealed as to buy the sheet bars at current prices and have them converted.

No Market; No Price

Chicago, Feb. 17.—Manufacturers of sheets are utterly unable to quote on further business and consumers who desire further supplies are making the rounds uniformly without success. The eastern situation seems to be fully as tight as in the West, and buyers are unable to place business, although offering heavy premiums over quotations at which last sales were made.

Shipments Backing Up

Youngstown, O., Feb. 17.—Eastern shipments of steel products are being delayed on account of embargoes and as a result large quantities of sheets are being piled on shipping wharfs. In some cases the makers have had to divert some of the completed tonnage into territories not affected by the embargoes in order to make room for material going through their mills.

Sheets for second quarter delivery are not to be had from makers in this district. Buyers who for some time have had their orders placed with makers having to buy their supply of sheet bars from outside mills, may be disappointed as to delivery inasmuch as those makers are finding it difficult in getting semifinished material. Usually the mills order their supply of sheet bars about a week ahead of time, but now they are trying to line up material in such tonnages as will cover their requirements over the next quarter. They are meeting with little success on account of the present scarcity of steel in this district.

Inquiries are heavy. Mills are paying little attention to them and are declining either to quote on or promise material for future delivery.

Sells to Regular Customers

Philadelphia, Feb. 17.—Fair tonnages of blue annealed sheets have been booked for third quarter during the past week by the leading eastern maker but this business was done only at the urgent solicitation of buyers and only regular customers are being taken on. The price is on basis of 4.80c, Pittsburgh, for No. 10 blue annealed. Very little second quarter tonnage is being accepted because of the sold-up condition. A round tonnage of black sheets was sold at resale for third quarter at higher than 7.00c, Pittsburgh, for No. 28 gage.

Higher Offers

By Buyers of Tin Plate Unsuccessful—Production Holding Up

Pittsburgh, Feb. 17.—Demands for tin plate continue so urgent that little doubt exists but that considerably more than the base price of $7, Pittsburgh, readily could be obtained from domestic consumers. Buyers who want early tonnages recently offered $8 and even $8.50 per base box, Pittsburgh, in an effort to secure supplies but have not been successful. Manufacturers generally are committed to the base price of $7, and while none of them is taking on any new business at that price, only a few of them, and these the producers of only small tonnages, are accepting premium business. The industry as a whole is inclined to apply production against old orders and to get these out of the way before taking on fresh business. Independent makers of tin plate dependent upon the Carnegie Steel Co. for supplies of steel, appear to be getting relatively good shipments and to be operating their plants at a comparatively high rate. All manufacturers, however, are up against the difficulty of securing sufficient supplies of cars to make shipments and the consequence is that warehouses all through this district are filling up rapidly. Conditions in this respect are not so bad yet as to force any curtailment of production but unless car spottings soon increase, mill operations will be threatened by an exhaustion of storage space. Export demands for tin plate still are numerous but are getting even less attention than domestic demands for early tonnages.

Shape Inquiry Is Heavy

Big Lots Coming Up at New York—January Awards Total 135,000 Tons — Chicago Union Station Is Put Off Indefinitely

New York, Feb. 17.—Demand in the structural market shows no abatement, sellers continuing to report new inquiry being well maintained. One fabricator in this district stated that in January he figured on approximately 50,000 tons, and at the same time did not bid on almost the same amount. He also stated that from indications so far, the tonnage for February would be heavier than that for January, although inquiry continues greatly in excess of business placed. Sizable tonnages are being awarded. About 4000 tons for a building for the Johns Manville Co., and another calling for 3000 tons for a building for the Dunlop America Co., Buffalo, were awarded. Contracts are expected to be closed on projects involving 10,000 tons for two buildings, one at Fifty-seventh and Fifth avenues and the other at Madison and Forty-third streets. The largest active tonnage, on which bids have not been closed, is the inquiry for 5000 tons for the Liggett building to be erected at Forty-second street and Madison avenue.

The Bridge Builders & Structural Society reports bookings in January aggregate 75 per cent of capacity or 135,000 tons. This compares with 85 per cent or 153,000 tons in December and 69 per cent on 124,200 tons in November.

The comparative monthly reports follows:

Month	Per cent	Approximate tonnage
January, 1920	75	135,000
December, 1919	85	153,000
November	69	124,200
October	77½	139,500
September	78½	141,000
August	78½	141,000
July	74	133,200
June	65	117,000
May	49	88,200
April	24½	48,100
March	17½	32,300
February	12½	22,500
January	12	21,600
December, 1918	29	52,270
November	27	48,700
October	43	77,400
September	60	108,000
August	57	102,000
July	116½	209,700
June	56	100,800
May	60	108,000
April	64	115,200
March	47	84,600
February	55	99,900
January	53	95,400
December, 1917	121	205,200
November	77	138,600
October	61½	110,700
September	29	52,200
August	38	68,400
July	41½	74,700
June	47½	85,500
May	56½	102,000
April	61	110,000
March	68	122,000
February	59	106,000
January	61½	119,000

Boston Shipments Held Up

Boston, Feb. 16.—New England is not receiving shipments of steel, owing to the freight car situation, and the structural market, therefore, is at a standstill at present, although new contracts continue to be let and large building projects are being planned. The Dwight Mfg. Co., at Chicopee, Mass., has let the general contract for extensions which will require 700 tons of structural steel.

Eastern Mills Hampered

Philadelphia, Feb. 17.—The eastern output of shapes is greatly hindered by difficulty in obtaining coal and other materials. Probably not more than 50 per cent of capacity is now engaged. As a result the mills are even less in a position than before to take business offered. At least several thousand tons, however, which previously had been under negotiation, have been closed. These chiefly involved ship shapes at prices from 3.60c to 3.90c, Pittsburgh, while structural shapes booked ranged from 3.90c, Pittsburgh, upward. Domestic demand, except for ship shapes and steel to finish up work now under way, continues to show a tendency toward falling off. Export demand is very active and especially from Japan. A round tonnage for India was booked by an eastern mill in the past week.

As Much as 4.00c Paid

Pittsburgh, Feb. 17.—As much as 4.00c, base, recently has been paid for small prompt tonnages of structural beams and there are some makers who now regard this as the minimum price, being indifferent to inquiries carrying a lower price. The Carnegie Steel Co. has not departed from the old base of 2.45c, but in accepting business at that figure is not making specific dates. This company is sold several months ahead on shapes and the independent makers are booked at least through the present quarter. Lack of steel and the car shortage are restricting mill activities and delaying deliveries against old orders. These conditions intensify the demands of fabricating interests against urgent jobs and account for the premium sales. The McClintic-Marshall Co. has taken 20,000 tons for two monster warehouses to be erected in New York by a realty company organized by wholesale clothing merchants.

Insistent Demand for Material

Cleveland, Feb. 17.—Demand for structural shapes is insistent and inquiries are out for some fair size tonnages, but both the Steel corporation and the leading independent announce they have nothing to sell. One eastern mill was offered 7000 tons of business at any price up to 3.75c Pittsburgh. Fabricating shops are clamoring for material, and steel for some of the jobs let recently in this district is being taken out of warehouses builders preferring to pay the increased cost rather than postpone work. Definite projects are lacking because of the continued rejection of business by the principal mills supplying this district. Engineers and builders have repeatedly submitted tentative plans to the representatives of the mills, assuring them the business would be placed if the material could be had. In some instances they have refused to disclose the details of the projects or reveal the identity of the promoters, unless assured of the material. The largest job let during the past week in this district was for 3500 tons for Dodge Bros., Detroit.

Delay Chicago Union Station

Chicago, Feb. 17.—Present information is that the projected union passenger station in Chicago will not be carried forward at present and that competitors on steel have been notified that they may withdraw their figures. The tonnage involved is about 17,000 tons and the American Bridge Co. is understood to have been the low bidder. Difficulties in financing the project under present money conditions are said to be behind this change of the plans. The leading interest is out of the market on structural material and probably will not sell anything more during the present month, but perhaps may open its books for second quarter specification early in March. The leading independent is able to take a limited tonnage of heavy structurals which were under negotiation 10 days ago, and then will be entirely out of the market for any delivery up to July 1. On this material which may be booked within the next few days 3.00c to 3.50c, Chicago, is being done.

CONTRACTS AWARDED

Foundry building for American Radiator Co., Buffalo, 100 tons to John W. Cowper Construction Co.

Sheet mill and power plant for Milwaukee Rolling Mill Co., 1500 tons to Northwestern Bridge & Iron Co.

Hard coal storage shed for C. Reiss Coal Co. at Green Bay, Wis., 200 tons to Lakeside Bridge & Steel Co.

Shop addition for Illinois Car & Foundry Co. at Hammond, Ind., 600 tons to Wisconsin Bridge & Iron Co.

Locomotive shop and roundhouse for Cleveland-Cliffs Iron Co. at Hibbing, Minn., 200 tons to Worden-Allen Co.

New plant for Interstate Drop Forge Co., Milwaukee, 125 tons to Northwestern Bridge & Iron Co.

Two loft buildings for the Grund Coute Realty Co., New York, 20,000 tons to the McClintic-Marshall Co.

Tire factory for the Dunlop America Co., Ltd., Buffalo, 4000 tons to the McClintic-Marshall Co.

Extension to Diamond National Bank building, Pittsburgh, 250 tons to the Jones & Laughlin Steel Co.

Mill castings and spring building for the Lovell Mfg. Co., Erie, Pa., 700 tons to the Jones & Laughlin Steel Co.

Shipping building for the Hammermill Paper Co., Erie, Pa., 125 tons to the Jones & Laughlin Steel Co.

Steel for warehouse for Lyon Metallic Mfg. Co., Montgomery, Ill., 160 tons to International Steel & Iron Co., Evansville, Ind.

Two 500,000-gallon oil tanks at Tulsa, Okla., for the Tulsa Power station, 155 tons to Chicago Bridge & Iron Co.

Steel work for Sheridan-Plaza hotel, Chicago, 153 tons, to American Bridge Co.

Scandinavian-American bank, Tacoma, Wash., 2150 tons to McClintic-Marshall Co.

Building for United Lead Co., Elkhardt, Ind., 600 tons to independent shop.

Building for Dodge Bros., Detroit, 3500 tons, to Russell Wheel & Foundry Co.

Mill building for Otis Steel Co., Cleveland, 2300 tons, to American Bridge Co.

Factory building for Johns-Manville Co., Long Island, 4000 tons, awarded to the American Bridge Co.

Factory buildings for Dunlop-America Co., Buffalo, 3000 tons, through Foundation Co., awarded to American Bridge Co.

CONTRACTS PENDING

Union Railway station, St. Paul, Minn., passenger concourse, 625 tons, train shed 241 tons, bids in.

Belden hotel, Chicago, 3900 tons, bids in.

Pacific Telephone & Telegraph Co., Seattle, 1500 tons, bids asked.

Sugar mill at Delta, Colo., for Holly Sugar Corp., Denver, 350 tons, bids asked.

Warehouse and railroad shed for Samson Tractor

Co., Janesville, Wis., 800 tons, bids asked by Dupont Engineering Co.

Hurricane & Gulch railroad bridge in Alaska, 1200 tons, bids asked.

Buildings at Fifty-seventh and Fifth avenues, and Madison and Forty-third streets, New York city, 10,000 tons, awards expected soon.

Liggett building, New York city, 5000 tons, bids being taken.

Manufacturing building for the Dwight Manufacturing Co., Chicopee, Mass., 750 tons, bids being taken.

Steel plant and extension of Mansfield Sheet & Tin Plate Co., Mansfield, O., 2000 tons, bids being taken.

School No. 50, New York city, 800 tons, contract pending.

Ore Shipments

For 1920 Practically Contracted For—30,000,000 Tons Already Sold

Cleveland, Feb. 17.—The bulk of the iron ore to be produced by the leading independent operators in 1920 has been contracted for, two weeks after the announcement of prices, although large tonnages still are available. One of the largest producers has closed for practically its entire output of nonbessemer ore, and others report heavy sales, bringing the total tonnage covered by contract up to approximately 25,000,000. Another operator with large participating interests is about to close for around 5,000,000 tons, including an estimate of 1,000,000 tons to a separate interest in the valley.

Some of the operators closely in touch with the movement say that fully 30,000,000 tons practically are under contract, although making it clear that they expect a large movement of ore from the head of the lakes this year and that big blocks of ore are still to be had. The buying has been so brisk and has involved such large tonnages that after present negotiations have been completed little more business is expected to be done until spring. Some of the large furnace interests are known to be following a conservative course, and have not covered for the full amount of their estimated requirements. This is largely due to the transportation situation and other factors which they say might affect the production of pig iron. Two of the smaller Virginia furnaces closed contracts during the past week for about 75,000 tons, while a larger interest is about to close for 200,000 tons. The demand for bessemer ore is not so active as that for nonbessemer.

Following the announcement of the Oliver Iron Mining Co., that it has increased the wages of its mine labor 10 per cent independent companies are making a similar advance. The advance was forecast when the season's schedule of prices was made up.

The following committee representing the Lake Superior Iron Ore association will go to Washington for a hearing on taxation matters Feb. 20: F. B. Richards, H. G. Dalton, R. C. Allen, W. P. Belden, G. M. Humphrey, A. C. Bishop and J. B. Putnam. The commissioner of internal revenue extended an invitation through Mr. Richards, president of the association, to meet with experts of the bureau to consider the best methods of valuing iron ore mines for income tax purposes, and other matters having a special bearing on the taxes on incomes derived from iron mining.

Export Sales Increase

South American Purchases About Equal Oriental Sales — Good Order of Ship Plates Placed for Scotland—Inquiry Is Lighter

New York, Feb. 16.—With spot supplies of iron and steel in the hands of jobbers and dealers well cleaned out, the export agencies are finding themselves more and more dependent upon new production for their source of supply. Although foreign inquiry has declined precipitously and is today relatively small it is still sufficient to make the scramble for stocks general. The result of this change in the situation has been to increase the export sales made by the mills and to curtail sales made from stocks. It is estimated by one of the reliable dealers that the export sales made by the direct agents of the mills during the first half of February were about 30 per cent larger than those made during the first half of January. Shipments made by the mills on export account during the same period represented an equal increase. It would appear that the market has about reached its lowest ebb and some improvement should now be recognized.

Whether or not the price movement has reached its maximum, however, is another matter. The insistent demand has been one of the greatest factors in increasing prices, and when this became evident some of the exporters deliberately counseled their foreign clients to withdraw from the market. The result has been felt generally. Mill agents assert that the largest export demand was present in this market during the period between Jan. 10 and 30. Since Feb. 1, however, the decline in inquiries from abroad has been apparent. The market has not yet recovered from the shock of the abnormal decline in foreign exchange of a week ago. That decline suddenly shut off European business and since then there has been no indication of its resumption. It was learned, nevertheless, that some British interests would still like to purchase billets in this market could they be obtained around $55 a ton. When the matter was broached by an export agent, an American producer offered some 2-inch billets at $65 a ton.

English business has been laggard since the first of the current month, although British purchasing agents are understood to be making shipments of some small tonnages of American spot material to various provinces which England cannot supply at the moment. One deal in ship plates for Scotland commands attention. The shipment in this instance was 1500 tons.

Agents in this market report that the decline in exchange already has materially aided English producers. It was pointed out that the British department of overseas trade reported that it had received 48 separate inquiries which offered possible markets for British goods in 26 countries, while in a later week the number of inquiries was 71 from 28 countries. These inquiries came from British provinces, continental Europe, and Brazil, Chile and Panama.

American exporters now acknowledge that the present tendency in trade is back to England and they are preparing themselves for the restoration of competition in that quarter. For some little time it may be necessary for the English exporters to fill their export orders to a degree from American supplies as has been the practice in the past. It was learned last week that some British agents purchased in this market about 1000 tons of plates for shipment to Australia, and about 2000 tons of plates for Shanghai. English buyers also sought to buy some tubes here for India but the contract was finally placed with a Canadian mill.

Last month the transatlantic companies reduced their freight rates on pig iron to $10 a ton and it has been possible to ship tin plate to England for $12 a ton. Iron and steel products have been accepted at rates between these two figures.

One of the largest agencies reports that it has sold 1000 tons of sheets to Italy since the first of February. About 1000 tons of tubing have also been purchased by Scandinavians. The American locomotive builders appear to be in a much better position than the steel mills to obtain foreign business. They are able to extend a credit of a nature which warrants some profitable orders. It was announced last week that the American Locomotive Co. has received an order from Spain for 15 Pacific type locomotives and an order from China for 20 Mikado type engines.

Exports to the Far East remain about on a par with what they have been during the past month. Some of the Oriental mills, however, recently have been put in operation and this has already been reflected in the Japanese demand. The Japanese are asking for a larger proportion of semi-finished material. American agencies have been selling structurals, sheets, wheels and tires to the Orient during the past two weeks, although there has been no tonnage of special importance in any of the orders.

South American trade has been maintained this month on a par with that of the Orient. We have been selling South American structurals, sheets, wheels, tires and wire in a constant volume.

To Install Furnace

The Standard Brake Shoe & Foundry Co., Pine Bluff, Ark., has purchased a 1½-ton electric furnace from the Greene Electric Furnace Co., Seattle, and will install it with other equipment in a new steel and concrete building now under construction. The new furnace will be used to supply steel for a new type cast-steel plate back for locomotive-driver brake shoes, and also for general steel jobbing work.

Semifinished Still Rising

Prices Higher Despite More Plentiful Offerings of Sheet Bars and Wire Rods—Car Shortage Curtails Mill Activities

Pittsburgh, Feb. 17.—Still higher prices have been touched since a week ago on practically all forms of semifinished steel, although offerings of sheet bars and wire rods have been larger lately than they were even as recently as a week ago. This is due to the fact that the car shortage has resulted in some curtailment of wire mill activities while several of the makers of sheets appear to have some surplus supplies of bars. A northern Ohio maker of sheets having some tonnage of sheet bars bought in anticipation of the completion of an addition to his plant, finds that starting the new capacity is impossible at present and is offering the bars on the open market. A Pittsburgh district sheetmaker has suspended mill operations for the purpose of making some plant repairs and is offering about the same amount of sheet bars as its mills ordinarily would consume. Another Pittsburgh district steel company also has some steel in excess of its finishing mill requirements and is rolling it into sheets bars. In spite of this condition, however, sales of bessemer sheet bars have been made at $70, Pittsburgh, the steel to go to another company under a conversion arrangement. It is understood that the sale of a tonnage of open-hearth sheet bars recently was practically concluded at $80, Pittsburgh, on a conversion arrangement but the buyer wanted time to locate a mill that could roll the steel and the seller declined. On rerolling billets and slabs $60 now appears to be the minimum with most makers uninterested at less than $65.

Billets Sell at $55

Philadelphia, Feb. 17.—Semifinished steel is difficult to obtain but about 5000 tons were sold in the East to regular customers during the past week for second quarter at $55, Pittsburgh, for rerolling billets and $70 for forging billets these figures are minimum. Some rerolling billets have been sold at $60, Pittsburgh, for fairly near shipment and some forging billets are said to have been sold for shipment out of stock at around $80.

Want Heavy Tonnages

Youngstown, O., Feb. 17.—Sheet bar consumers in this territory are having difficulty lining up enough material to take care of their future requirements on account of the scarcity of steel here. They are in the market right now for heavy tonnages of this material. Irregular shipment of coal together with heavy demands for steel products is causing sheet bars to become scarce right along.

Strip Still Higher

Pittsburgh, Feb. 17.—Still higher prices have been established on hot-rolled strip steel by leading makers in this district who now are quoting a base of 5.00c, Pittsburgh, against new demands. Not much tonnage is available for shipment over the next 60 or 90 days even at this price, which represents an advance of $15 per ton over the old quotation, and it is understood that some business recently has been done as high as 5.50c, base. No change is noted in cold-rolled strip steel, the recognized base of which is 7.00c, Pittsburgh, but here as with hot rolled strip steel makers are committed several months ahead and no prompt tonnages are available for much less than 8.00c, base. It is claimed in explanation for the advance in hot-rolled strip steel that billets recently have not been obtainable at less than $65 while some makers claim to have paid $75 for early tonnages.

Higher Prices

Are Named on Warehouse Products in Number of Districts

Chicago, Feb. 17.—Leading independent warehouse interests in Chicago territory effective Monday, advanced their prices $10 per ton. The new schedule puts steel bars at 3.87c, structural shapes at 3.97c and plates at 4.17c. The demand for steel from store is keeping up to large proportions, but jobbers are able to handle only a portion of it because of their depleted stocks.

Boston Prices Up

Boston, Feb. 16.—Existing embargoes on all warehouse iron and steel are rapidly causing the depletion of many stock lines. The warehouses here have increased the minimum prices of steel bars to 4.50c; shapes to 4.25c; No. 10 blue annealed sheets to 6.05c; No. 28 black sheets to 8.15c; No. 28 galvanized sheets to 9.50c; bands to 6.00c and hoops to 7.00c. Market conditions are tight.

Buffalo Makes General Advance

Buffalo, Dec. 17.—A general advance on all warehouse stocks was made in this district this week. Steel bars are now quoted 4.06c to 4.11c; iron bars, 4.76c; shapes, 3.91c to 3.96c; plates, 4.11c to 4.16c; No. 10 blue annealed sheets, 5.46c to 5.51c; No. 28 black sheets, 7.50c; No. 28 galvanized sheets, 8.50c; bands, 4.76c to 5.16c; hoops, 5.96c, and cold rolled shafting, 5.50c to 6.00c.

To Make Steel Wheels

Directors of the Reliance Wheel Co., Youngstown, O., have authorized the construction of a new plant on a five-acre tract adjacent to the plant of the General Fireproofing Co. The Reliance company was organized recently for the purpose of manufacturing double disk steel wheels for automobiles. Directors recently elected include, L. B. McKelvey, C. T. Gaither, J. M. Crenan, H. E. Hull, J. S. Culp, T. E. Milliken and S. W. Goldcamp. J. M. Crenan is president; T. E. Milliken, vice president, and H. E. Hull, secretary-treasurer.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead. New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Feb. 11	19.00	59.875	8.75	8.75	33.00	11.50	43.00
Feb. 12	Holiday	.....	.....	.....	.....	.....	.....
Feb. 13	19.00	59.75	8.75	8.75	33.00	11.50	43.00
Feb. 16	19.00	61.00	8.75	8.80	33.00	11.75	43.00
Feb. 17	19.00	61.25	8.75	8.75	33.00	11.75	43.00

*Future shipment from Singapore or London.
†American Smelting & Refining Co.'s price.
‡Producers.

NEW YORK, Feb. 16.—Nonferrous metals generally have shown little change in the past week so far as the broader conditions of trade are concerned. Some prices now are a little higher than a week ago, but copper remains weak, with not much buying and slightly lower prices by some producers. In this metal as in zinc and tin, the exchange situation is a dominating factor. Low quotations on Sterling caused the substantial export movements of copper and zinc to vanish several weeks ago, but in the past few days part of the strength of zinc was said to be due to renewed hope of foreign shipments of this metal through exchange enabling the English market to meet American prices more easily. But this principle did not hold with copper.

The red metal more than most others, depends upon substantial exports to give its market firm backbone. In recent weeks, however, domestic buying also has been lacking, so with buying from both sources at a standstill, the market had little support. Producers gradually have been letting their prices decline to the 19c level for all shipments, but there has been a tendency to hold this as the bottom of the market, until today, when it was said a favored customer with large order might obtain metal a shade under this figure. Lake copper now also is obtainable as low as 19c, while some quotations are 19.25c. Casting copper is 18.25c. Small amounts of electrolytic may be purchased in the outside market now and then at 18.50c and up.

Prime western zinc has climbed materially above its weakness of a little more than a week ago, but today was not quite so high as on Saturday, when business was done as high as 8.90c, East St. Louis. The reaction today to 8.75c and 8.87½c was in accord with weaker exchange coming at the same time the London market dropped. Good galvanizers' inquiry now is out for prompt and March.

Lead continues strong, with all producers sold well ahead and prompt metal exceedingly difficult to obtain. Most producers continue to sell a quarter of a cent above the leading interest's quotation on March, and the premium on prompt is still an eighth of a cent additional.

Tin is up several cents, partly because of higher exchange, and partly because stocks in this country now are largely in stronger hands, after recent profit-taking sales, which were brought about at lower prices when banks applied pressure on loans on stocks of merchandise. However, metal was not sold at sacrifice, as it had been bought before the rise several weeks earlier. Fair inquiry has come into the market in the past few days, after a period of quietness. It is from consumers who want mostly nearby delivery, but some was sold also for April-May shipment from the East.

Little Activity

Shown at Auction of Former German Ships by Shipping Board

Washington, Feb. 16—Surrounded by numerous restraints, auction today by the United States shipping board of 30 former German passenger ships was anything but lively. While the rooms where the auctioneering was held were jammed during the bidding, which was postponed this evening until Tuesday, and much public interest was manifested, bidders did not show much enthusiasm, except in a few cases. Bids as a general thing, when made for individual ships, were substantially less than those received Jan. 20. Reasons for the dull bidding were due to several causes, including congressional action to prevent the ship sale, and the Hearst injunction proceedings.

Chairman Payne was in court in connection with the injunction proceedings, and the auction was conducted by Commissioner Thomas A. Scott, who read a memorandum by Payne, saying the highest bids must be approved by the senate commerce committee and the house committee on merchant marine. Acceptance of bids would depend upon the outcome of the injunction proceedings. Scott also stated that terms of sale would be arranged to suit the convenience of the board and bidders. All ships sold must operate under the American flag.

Bids were first asked offering the ships in groups for routes assigned by the government, but none were received. Later when bids were asked for groups of ships to serve in routes named by prospective buyers, fair activity developed. The most prominent bidder was A. P. S. Franklin, president of the International Mercantile Marine Corp. Other bidders of prominence included Major General George W. Goethals, American Ship & Commerce Corp.; A. V. Moore, Moore & McCormack Co.; Philip Deronde, Oriental Navigation Co.; Vigo Steamship Co.; C. B. Richards & Co.: International Bureau of Supplies and the Munson Steamship Line. Early in the day bids were asked on the LEVIATHIAN, AGAMEMMON, MT. VERNON, VON STEUBEN, MARTHA WASHINGTON, GEORGE WASHINGTON and AMERICA, but none were received. The International Mercantile Marine Corp. offered a conditional bid of $14,050,000 for nine vessels for service to the United Kingdom and northern ports, including the LEVIATHAN, GEORGE WASHINGTON, AMERICA, PRESIDENT GRANT, NANSENTON, ANTIGONE, POCAHONTAS, MATOIKA and CALLAO.

Total bids received by mail for 30 ships at the opening last month was $32,227,826, and the valuation of 26 of the ships was $19,949,130. Total bids at the morning session today was $32,350,000 on 41 ships.

Steel Companies Lose in Rate Cases

Washington, Feb. 17.—In a group of tentative reports submitted to the interstate commerce commission last week, five iron and steelmakers were defeated in their effort to have their complaints made effective.

The petition of the Thomas Iron Co. for a reasonable rate on coke from Seaboard, N. J., to the company's furnace at Hellertown, N. J., was recommended for dismissal, the report declaring the present rate of $1.65 per ton is not unreasonable.

The rate on bituminous coal from West Virginia points to Coatesville, Pa., complained of by the Lukens Steel Co., was urged as reasonable and it was recommended the complaint be dismissed.

In the case of the Buckeye Steel Castings Co., it was suggested the complaint be dismissed, as the refusal of the Hocking Valley and the Toledo & Ohio Central railroads to grant an allowance for switching by the Buckeye company's own equipment at Columbus, O., is not unduly prejudicial.

Rates charged the Highland Iron & Steel Co., Terre Haute, Ind., on scrap iron from Chicago were reported not illegal, unreasonable or otherwise unlawful.

While it was recommended that the complaint of the Timken Roller Bearing Co., Canton, O., be dismissed, it was found that the $3498 charged as demurrage was assessed through an error and that the amount had not been paid.

Wants Catalogs

Organized to manufacture and distribute air turbine driven hand tools, planers, drills, valve grinders, etc., the Turbine Air Tool Co., maintains an office at 301 Chamber of Commerce building, Cleveland. It wishes to receive catalogs, etc., for the use of its purchasing and engineering departments.

Starts on New Mill

The Worth Steel Co., Claymont, Del., has started work on the construction of a second complete plate mill unit and hopes to have the latter ready for operation in April or May.

Favor Grouping Federal Engineering Bureaus

Washington, Feb. 17.—The senate committee on public lands last week completed hearings on the Jones-Reavis bill to change the name of the department of the interior to the department of public works and to combine in the latter all of the civilian engineering bureaus of the government. This extremely important proposal has been endorsed generally by government officials, including Secretary of the Interior Franklin K. Lane, and engineering societies and manufacturing interests of the country, who appeared before the committee on behalf of the measure.

Such organizations as the bureau of standards, department of commerce, and the bureau of roads, department of agriculture, would be combined under this single executive branch. Such a plan, it is said, would co-ordinate the work of these various engineering bureaus, and increase efficiency by avoiding considerable duplication of effort, which now prevails. These results, it is asserted, would put private interests dealing with the government into more immediate touch with it.

Buys Belting Plant

The leather belting business of the Edward R. Ladew Co., Inc., Glen Cove, L. I., has been sold to the Graton & Knight Mfg. Co., leather belting manufacturers, Worcester, Mass. The transaction, which included the purchase of the plant, office and general business of the Ladew company involved a consideration, it is said, of several million dollars. It was closed on Feb. 10 and was effective as of Feb. 1. Edward R. Ladew Co., Inc., originally was known as J. B. Hoyt & Co., Fairweather & Ladew, and was organized in 1846 in New York. The main plant was installed in Glen Cove in 1903 and since that time has been Glen Cove's principal industry, employing several hundred men. The Glen Cove Light & Power Co., a subsidiary, was not involved in the deal.

Completes New Foundry

The Dodge Steel Co., of which Kern Dodge, Morris building, Philadelphia, is president, just has completed a modern steel foundry at Tacony, Philadelphia, equipped with an electric furnace of the Greaves-Etchells type and it is expected that the new foundry will be in operation by the end of February.

Hoover's Policies

Are Outlined by Him at Annual Meeting of Mining Engineers

New York, Feb. 17—By Wire.—National and international problems dominate all other topics discussed at the annual meeting of the American institute of Mining and Metallurgical Engineers at the Engineers building in this city now in session. At the banquet Tuesday night, attended by nearly 1000 persons, Herbert C. Hoover, the new president of the institute, reviewed the American economic, social and political situation, and advanced solutions for certain problems. After urging the ratification of the peace treaty, he pleaded for the return of the railroads. He emphasized the need of increased transportation facilities, and declared that drastic changes in the American shipping policy are needed. Speaking of government control of industry, Mr. Hoover said:

"No scheme of political appointment has ever been devised that will replace competition in its selection of ability and character. While in the case of the railways, government inefficiency could be passed on to the consumers, it will sooner or later find itself translated in the national treasury.

"It would seem a good policy for the government to sell ships today for the price we can contract for their delivery a year or two hence, thus making the government a reservoir for continuous construction."

Mr. Hoover advocated the concentration of governmental construction work in a department of public works, the adoption of a budget system, and recognition of a social philosophy based on ability and character.

Tuesday afternoon's session on the coal situation brought forth illuminating information on the labor problem, it being shown that industry has 20 to 30 per cent, or 100,000 more workmen than would be required if the mines worked continuously, instead of intermittently. The meeting will continue Wednesday.

George Otis Smith, Van H. Manning and others Monday warned against a dwindling oil supply in the United Stats and urged our entry in foreign fields.

Page Officers Elected

The new officers elected for the Page Steel & Wire Co., Adrian, Mich., under the reorganization of the company which was recently taken over by the American Chain Co., New York, are: President, Walter D. Lashar; vice president, William T. Morris; treasurer, Wilmot F. Wheeler; assistant treasurer, John E. Carr; secretary, William M. Wheeler. E. C. Sattley, general manager of the Page Steel & Wire Co., will continue in that capacity with offices in Pittsburgh.

Coal Conditions in New England Is Serious

Boston, Feb. 16.—The coal situation in New England which has been alternately reported on the verge of a famine and reasonably plentiful is actually far from satisfactory. There is a car shortage throughout New England affecting the redistribution of supplies on hand and outlying plants in many cases are on the last week's supplies. A good supply of anthracite in steam sizes exists which would relieve the situation if the railroads were able to take care of deliveries. The New York, New Haven & Hartford railroad has been most severely affected of any and thousands of coal laden cars are now frozen in on sidings and at junction points. The seriousness of the situation has been hard for manufacturers to accept, but the closing down of several large plants has brought them face to face with the reality of a coal shortage. To aggravate matters the Cape Cod canal has been frozen over but United States destroyers have succeeded in opening this passage way and water coal is commencing to arrive at Boston. Indirectly this tightness in bituminous coal has affected many markets and unless the situation is relieved developments of the utmost seriousness may be expected.

Mine to Resume

Duluth, Feb. 17.—(By Wire.)—The Schley mine at Gilbert, Minn., owned by the Republic Iron & Steel Co., will resume operations at once after an idleness of six years, according to an announcement by Frank J. Webb, mines manager of company. The mine is one of the largest underground properties on the Mesabi range. It adjoins the Pettit mine also owned by Republic interests, and its reopening at this time is credited to the realization that the demand for iron ore is likely to be heavy during the coming season. Stockpiling will be carried through during winter.

The Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich., is completing a $50,000 molding room addition.

Marting Plant

Is Reorganized Through the Purchase of Holdings by New Interests

Carmi A. Thompson, vice president of the Tod-Stambaugh Co., Cleveland, iron ore mine operators, and C. E. Sullivan, president of the Superior Savings & Trust Co., Cleveland, have purchased an interest in the Marting Iron & Steel Co., Ironton, O., from the nephews of the late Col. H. A. Marting, and the company has been reorganized. While not a controlling interest, the purchase represents a fairly large block of stock in the company, which is capitalized at $2,000,000, and also represents the entire holdings of Otto and W. W. Marting. The immediate family of Colonel Marting retains its controlling interest in the company.

At the recent reorganization meeting Mr. Thompson and Mr. Sullivan were elected members of the executive board, succeeding Otto and W. W. Marting. Mr. Thompson was then elected chairman of the board and Mr. Sullivan was elected treasurer. The directorate now also includes J. A. Greene, F. L. Marting, F. L. McCauley, Dr. A. C. Lowry, Dr. J. W. Lowry, W. P. Lewis and A. H. Mittendorf. Dr. A. C. Lowry will continue as president of the company and Otto Marting and W. W. Marting will remain as vice president and secretary, respectively, until their successors are chosen. C. B. Fowler will remain as general superintendent of production.

While official confirmation is lacking it is currently reported in Ironton that Dr. A. C. Lowry and associates purchased $444,200 worth of the stock of the company at par value, $100,000 worth of this being taken by C. B. Fowler, $109,200 worth by Dr. J. W. Lowry and the balance by Mr. Thompson and Mr. Sullivan. The Tod-Stambaugh Co. is not directly interested in the transaction, but there is said to be "a friendly association" of interests between the two companies.

The Marting company operates three merchant blast furnaces with a capacity of about 850 tons daily, and there is no intention at present to extend its activities or build a steel plant, as reported in some quarters.

Buy Ship Material

Philadelphia, Feb. 17.—F. R. Phillips & Sons Co. have bought 25,000 tons of plates, shapes and bars from the Emergency Fleet corporation. The purchase includes only plain material.

Prices of British Steel Soaring

Billets in Great Demand at $80.52, While Nominally Quoted at $73.81—Sheet Bars Selling at $100.65, and Wire Rods at $83.88—Shortage of Foreign Ores Restricting Output—Furnaces Slowing Down

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
16 Regent St., S. W. 1.

Sterling—$3.35½

LONDON, Feb. 17.—Prices of semifinished steel have advanced to extraordinary levels. There has been excited buying of billets, nominally quoted at £22 ($73.81) at £24 ($80.52). Rerolling mills are working less than half time. American steel, purchased at £15 ($50.39) on old contracts, is now arriving. Sheet bars are selling at £30 ($100.65) while wire rods are bringing £25 ($83.88). American rods at the current rate of exchange are costing £32 ($107.36).

Cleveland basic iron has advanced 5 shillings (84 cents) and is now selling at £9 5s ($31.04). Favored neutrals are getting Middlesborough No. 3 iron at £9 ($30.20), while other foreigners are paying £11 10s ($38.58). Many orders for pig iron are being refused, some furnaces slowing down three times week.

A shortage of foreign ore is restricting steel production. Galvanized sheets are soaring, the price spread being from £50 ($167.50) to £70 ($234.85). It is nearly impossible to get orders for steel accepted. The producers' association has advanced semifinished £2 ($6.71) and finished steel £1 ($3.36). The third 8-hour shift is starting work at the ironworks, but skilled men are lacking. Current prices are nominal, buyers being pledged to pay the prices prevailing at time of delivery.

Lack of transportation is deadlocking the French iron trades. Many plants in Lorraine, employing 6000 German steelworkers, have been forced to suspend operations. At Knutange three of five furnaces are out of blast. The tin plate mills are congested with orders. The exchange rate for francs has stopped American and English orders.

Great Volume of New Business Is Turned Away

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation Street,

Sterling—$3.50

BIRMINGHAM, Eng., Jan. 31.—The settlement of prices appears to have stimulated demand, with semifinished steel most active. Sellers of steel at Birmingham are besieged by customers seeking to place new business, or eager to get deliveries on old contracts. Their efforts, however, were unsuccessful. No promise will be made as to deliveries, while the agents have instructions to submit all offers of business to the steel works for consideration.

A number of rerolling mills are idle, or operating only one to two days a week. Some of the buying indicates a feeling of panic. As much as £22 ($77) was paid for billets urgently needed to keep mills in operation. Most of the steel used in the Midlands comes from South Wales, where the steel works are encumbered with enormous demands from sheet and tin plate mills. When the steel works started after the strikes, every effort was made to catch up on old orders, but the producers are further behind than ever. No American steel is quoted or delivered at present, while the recent offers from Belgium and France are supposed to have been either feelers to test the condition of the market, or preliminaries to a resumption of trade relations. There is no sign of the steel eagerly looked for. Manufacturers have complete control of prices, so that further advances seem inevitable. Advances in pig iron here have been moderate, but Northamptonshire is quoted at 2 shillings, 6 pence (44 cents) above last week's prices, making forge £9.2.6 ($31.94) and foundry £9.7.6 ($32.81). Ferromanganese has been advanced £1.10.0 ($5.25) for 80 per cent quality, making the price £30 ($105). A big demand is looked for for Staffordshire cold blast pig iron, as well as for best foundry material, now that the molders are at work. There is a good demand for basic pig iron at £10.10.0 ($36.75).

The molders' strike with its consequent crippling of the mills partly accounts for the very high prices of galvanized sheets. At the Birmingham exchange this week the quotations ran up to as high as £50 ($175). Quotations on black sheets range from £36 ($126) to £40 ($140).

Puddled bars were quoted as high as £20 ($70). Continental users of pig iron are reported to be eager buyers, neutrals having paid as much as £11 ($38.50) for small tonnages of No. 3 iron. Makers of hematite are selling

Current British Prices

Domestic and Export. Gross Tons at Works

	£ s d	$
SEMIFINISHED STEEL		
Billets, soft steel	22. 0.0	73.81
Sheet bars	27. 0.0	90.59
FINISHED STEEL		
Steel bars, England, ⅜ to 3 inch	27. 0.0	90.59
Sh'p plates, England	23.10.0	78.84
Ship plates, Scotland	23.10.0	78.84
Beams, England	19.10.0	65.42
Beams, Scotland	19.10.0	65.42
Sheets, black, 24 gage	40. 0.0	134.20
Sheets, galvanized, 24 gage	52. 0.0	174.46
Rails, 60 lbs. and over	19.15.0	66.26
Tin plate, base box, 108 lbs.	3.11.0	11.91
PIG IRON*		
Hematite, East Coast Mixed Numbers	11. 0.0	36.91
Hematite, Scotch	10.10.0	35.23
Middlesborough Basic	9. 0.0	30.20
Middlesborough No. 3	9. 0.0	30.20
No. 3 Foundry, Derby, Leicester, Nottingham	10. 2.6	33.97
No. 3 Foundry, Northamptonshire	9.12.6	32.30
No. 3 Foundry, Staffordshire..	10.12.6	35.65
Scotch Foundry.	10.10.0	35.23
Ferromanganese, 80 per cent..	30. 0.0	100.65

*Pig iron quotations are f.o.b. furnace for delivery in the United Kingdom. For export to Belgium, France and Italy, prices are 5 shillings per ton higher, except on hematite which is 10 shillings higher; other export quotations are subject to free negotiation.

COKE		
Yorkshire furnace	2.13.6	8.98
Yorkshire foundry	3. 6.0	11.07

cautiously, owing to the uncertainty of higher prices.

With regard to the Barrow-in-Furness district strong efforts will be made to increase the number of furnaces in blast. When the armistice was signed there were 31 furnaces blowing, between Workington and Carnforth. By February last year, the number was reduced to 28 and later to 19, the number now in operation. It is hoped that if transportation can be improved several more furnaces will be started before May or June. The demand for low phosphorus iron is very great, and ore supplies have slightly improved recently.

The British market is undoubtedly strengthened by the news conveyed through THE IRON TRADE REVIEW'S cablegram in regard to the congested state of the American mills. Transportation on this side continues to be the most formidable problem. In the Middlesborough district, it is reported that 70,000 tons of finished steel are waiting to be shipped. This is restricting output. The Middlesborough steel makers are dissatisfied with the shortage of cars, and are arranging to make some representations to the authorities. Owing to the deficient production of steel, shipbuilding is seriously hindered, particularly on the northeast coast. The various yards are overwhelming the steel works with orders, and are clamoring for delivery.

In the Sheffield district the makers of railway tires, axles and springs, have become very busy, the railways apparently having at last decided to place large orders for rolling stock.

The South Staffordshire iron works are handicapped by lack of coal, while the 8-hour system is a serious obstacle to production. Attention is being directed to the only possible remedy, the installation of a third 8-hour shift. The manufacturers are refusing a great deal of business, while the makers of best iron are especially pressed with work, because of the demand for engine shafting and the large consumption of high-class material for chains, cables, and shipbuilding generally.

The report of coal output for the week ended Jan. 17 shows a further increase, the tonnage being 4,902,906, compared with 4,540,723, the previous week.

Prices of Welsh tin plate have not yet reached the peak. The makers are asking as much as 75 shillings ($13.12) per box for standard tin plate, a rise within a week of over 5 shillings (87 cents) per box. Consumers are in the market for supplies to the end of the year, discouraging any prospect of reduced prices. The above selling figure compares with 33 shillings, 10 pence ($2.43) when control was lifted a year ago. It is generally estimated that the 40 per cent wage advance conceded to the workers added 1 shilling, 2 pence (20 cents) to the cost of production per box. Tinned bars have also increased, the steel works asking as much as £25 ($87.50) per ton. There is a good deal of speculative buying, but the world demand is so enormous that much higher rates are looked for. A conciliation board has been established in South Wales, similar to the Midland iron and steel wages board, one result of which has been to secure the men a bonus of 175 per cent of their wages.

The minister of shipping has directed a number of vessels to bring ore from Spain to meet the needs of Welsh blast furnaces. Several strikes are in force in that district, affecting the iron and steel trade in various departments.

Only Foreign Iron Available in Belgium

European Staff Correspondence

Value of Franc, $.0724

BRUSSELS, Jan. 29.—The Belgian iron and steel situation is stagnant from all reports. Rumors of strikes have been met with a disposition on the part of employers to accord a further raise in spite of an augmentation recorded of from 300 to 325 per cent since before the war, taking into consideration the reduction in the number of hours of the working day.

Pig iron production reached 1650 tons a day on Dec. 31. Though coke and ore were lacking in desired quantities these shortages have apparently been relieved by the arrival of 80,000 tons of German coke in the Liège district, the ordering of 200,000 tons more of the same source, and in the Briey ores which France has agreed to ship into Belgium for the latter's pressing needs.

For the moment native pig iron is not to be had in the open market. Foreign pig iron is only offered at exorbitant prices, that of Lorraine for example being quoted at from 550 to 600 francs ($39.60 to $43.44) a ton, from 50 to 70 francs ($3.60 to $4.34) a ton more than the last quotations for Belgian iron.

Semifinished products are extremely rare for stock deliveries, showing that prices are advancing with demand, rather than on production costs alone. Merchant iron and steel has been steadily rising in price.

The transport crisis so general throughout Europe has had its effect on Belgian iron and steel prices and may be considered the underlying cause of many of the sharp fluctuations.

Raw Material Shortage Cripples France

European Staff Correspondence

Value of Franc, $.0756

PARIS, Jan. 29.—Longwy pig iron continues at 400 francs ($30.24) per ton, with hematite iron at from 520 francs to 540 francs ($39.31 to $40.82). These prices mark a raise over those of December of 90 francs ($6.80) per ton and are entirely due to the abnormal rise in prices of metallurgical coke, which are now stabilized at from 140 to 160 francs ($10.58 to $12.10) per ton, with further probable increases because of transportation costs. In the cases of plants not accessible to coke supplies these prices certainly will be increased another 20 francs ($1.51) or more. This is apparently the high limit foreseen for the moment though the Hematite Iron Comptoir steadily refuses to quote for February or March deliveries owing to the instability of market conditions and of supplies of raw materials. If exchange remains at the present figure America's

chances of doing business in the metal industry in France will grow less and less.

Steel plants and rolling mills throughout France are suffering from the same shortage of raw materials and partial or total shut-downs are becoming more and more frequent. One plant at Creil, in suburban Paris, employing 1200 workmen is running but four days a week and but 30 per cent of the forges of the lower Loire are in operation owing to a shortage of raw materials and fuel.

Now that the Saar basin has come definitely under the protection of the League of Nations as a result of the treaty ratification, the government is to establish a price scale at which all metallurgical products must be sold in the open market.

Production in the Saint Etienne region in mid-France has slowed down notably and the local market is by no means able to supply its needs. The liberated regions of north France are drawing their supplies from the Longwy region and Lorraine, as they should from the geographical situation, but the lower Loire and the upper regions centering upon Lyons and Saint Etienne always have been the source from which mid-France has obtained supplies. Therefore the almost total stoppage of merchant steel production there the crisis is keenly felt. Out of 47 open-hearth furnaces of Saint Etienne district but 13 are producing, and of 28 crucible steel plants but eight are running. The Committee des Forges of the Loire is demanding of the government the application of a new system of coal distribution and encouragement which shall enable coke to be produced locally rather than being brought in from the outside.

Merge Cleveland Plants in New Corporation

Consolidation of five leading manufacturing companies in Cleveland under the name of the Consolidated Iron-Steel Mfg. Co., has been effected, and the new owner will take over the plants involved immediately. The companies in the merger are: The Republic Structural Iron Works Co., fabricator and iron and steel jobber; the Taylor & Boggis Foundry Co.; the Columbian Hardware Co.; the Ideal Hanger Co. and the Duplex Hanger Co. The new company, which was incorporated last fall, has a capital and surplus in excess of $3,000,000. Officers are: President, I. T. Kahn; vice president, H. F. Seymour; secretary, J. Lehman and treasurer, Adolph Tuteur. These men with Corliss Sullivan, Joseph Hostetler, Richard Cobb and A. V. Cannon, compose the board of directors. It is understood the company will enlarge the present production of the various companies which it has absorbed.

Plan Malleable Plant

Ira L. Houghton, Toledo, O., formerly president and general manager of the Maumee Malleable Castings Co., that city, has organized the Houghton Malleable Castings Co., with a capital of $500,000. It will build its plant on a 25-acre site already acquired in Toledo. The construction of the first unit will be commenced early in March. It will comprise about 150,000 square feet of floor space and contain three 35-ton electric furnaces, core and annealing ovens, etc. The buildings are to be of steel and glass construction and new equipment throughout will be purchased as soon as building contracts are let. Mr. Houghton, who has been affiliated with the malleable iron industry for over 25 years in purchasing, sales, production and management, is maintaing offices as president and general manager of the new company at 965-966 Spitzer building, Toledo.

Will Sell Steel

The Barde Steel Products Co., recently incorporated under the laws of Delaware, has been organized by M. Barde & Sons, steel, iron and machinery merchants of Portland, Oreg. The latter company has been doing business in this line for 25 years. Other members of the board of directors include bankers both from New York and the west. The Barde Steel Products Corp. now owns between 350,000 and 500,000 tons of steel, consisting of plates, shapes and bars of all descriptions, which were recently purchased from the United States shipping board. The value of this contract is placed at about $30,000,000. It is also stated the company is negotiating for an additional large quantity of steel. L. Baron, formerly manager of the engineering and chemical department of J. Aron & Co., Inc., has been appointed general export manager of the new corporation. Mr. Baron has had a long and varied experience in the export business which will enable him to sell a large portion of the material in the foreign markets.

A large warehouse will be built in Connecticut by the Truscon Steel Co., Youngstown, O.

Ingot Production

For January Lower Than Year Ago—Improvement Over August, 1919

Steel ingot production for January, 1920, totaled 2,966,662 gross tons according to the monthly production figures as compiled by the American Iron and Steel institute which have been resumed after having been temporarily discontinued since August, 1919. These figures represent the output of 30 companies which made about 84.03 per cent of the total ingot production for the United States in 1918. In January, 1919, the total output was 3,107,778 tons or 141,116 tons more than the production for January of this year.

Of the 2,966,662 tons produced, 2,241,318 tons were produced by the open-hearth process, 714,657 tons by the bessemer process and the 10,687 tons by all other methods. The corresponding figures for January of the previous year were 2,351,153 tons by the open-hearth process, 749,346 tons by the bessemer process and 7279 tons by all other methods. It is interesting to note that while both the open-hearth and bessemer processes decreased by about 4.5 per cent, steel made by all other methods increased by 47 per cent.

Following are the institutes production figures for January, 1920, and the figures for the first eight months of 1919:

Months	Open hearth, gross tons	Bessemer, gross tons	All other, gross tons	Total, gross tons
Jan., 1920.	2,241,318	714,657	10,687	2,966,662
Jan., 1919	2,351,153	749,346	7,279	3,107,778
February .	2,043,635	655,206	5,842	2,704,683
March ...	2,100,528	555,332	6,405	2,662,265
April	1,732,447	500,770	6,494	2,239,711
May	1,506,015	414,392	8,017	1 928.324
June	1,692,257	521,634	5,328	2,219,219
July	1,875,630	625,240	7,300	2,508,170
Aug.	1,988,651	748,212	9,218	2,746,081
Total for 8 months.	15,290,316	4,770,138	56,483	20,116,937

The daily average for the 30 companies was 114,102 tons and since the 30 companies produced 84.03 per cent of the total in the country, the daily rate for the whole country was 135,787 tons. The yearly rate for the same companies was 35,143,416 tons or 41,822,463 tons for the whole industry. This is a big improvement over the annual rate as shown by August, 1919, the last institute figures available, when the rate was 38,025,181 tons.

The Whitaker-Glessner Co., Wheeling, W. Va., dedicated a new recreation hall and auditorium for employes, at Manchester, near Wheeling, recently.

Defines Status of Rail Orders

Government's Director of Purchases Says Administration Will Not Be Responsible for Supplies Delivered After March 1—Practically All Contracts, However Will Be Filled—Roads Privileged to Cancel Undelivered Portions

WASHINGTON, Feb. 17.—The railroad administration will not be responsible for materials and supplies delivered to the railroads after termination of federal control, Henry B. Spencer, director of purchases, has notified the regional directors. Instructions issued on this point include arrangements under which the railroads may agree to accept deliveries after March 1 or, being unwilling to assume liability for the materials and supplies not received before that time, may cancel the undelivered portion of orders placed by the railroad administration.

It is said these instructions will affect but few, if any, steel manufacturers, as practically all administration contracts for rails or other steel products will be filled on March 1 or will be continued under arrangements satisfactory to the railroads for which the tonnages are booked. The recent rail commandeering order displaced some private contracts made by railroad corporations with the mills, but as the railroad administration was not responsible for them they do not come within the scope of the instructions issued by Mr. Spencer.

Failure of the administration to give adequate fuel and car supplies to certain mills probably will delay fulfillment of some of the contracts covered by the instructions to the regional directors, but it is believed the railroads to which the steel is allocated will not hold the makers responsible for this condition, and that arrangements will be made which will not be embarrasing to the steel manufacturers. In any event, except as to the rails to be delivered in accordance with the war department's commandeering order, the railroad administration claims it will not be responsible for deferred deliveries. As to these particular rails, however, it is expected deliveries will be completed by March 1.

241,000 *Tons Bought in* 1919

During 1919 the administration purchased 241,000 tons of rails at a cost of $1,128,000, according to Mr. Spencer in his annual report to Director General Hines. In addition, Mr. Spencer said, deliveries of 1,047,000 tons were accepted on contracts previously made. These contracts were originally negotiated by the railroad corporations with the makers. It has long been understood that these contracts, made as late as 1917, but delayed because of more urgent war requirements of the railroad administration and other government departments, were at $38 and $40 per ton.

In view of this understanding, and the fact that the railroad administration did not purchase any rails prior to establishment of the industrial board's price of $47 per ton last March, it is difficult to understand Mr. Spencer's report to Mr. Hines that in 1919 $60,764,970 were spent for rails. After deducting the $1,128,000 paid for the 241,000 tons, the remainder averages approximately $56 per ton for the rails received on the old contracts. This average is computed from Mr. Spencer's figures and no explanation is contained in the report of why the price is $16 per ton higher than the understood price. Purchases on private contracts at $55 or $57, the war price, extras, etc., would not, it is believed, bring the general average for the 1,047,000 tons to $56 a ton. Nor is it believed the figure includes spikes, tie plates and other track material.

Besides the $60,000,000 spent for rails, according to the report, and $403,815,000 for fuel and $108,232,000 for cross ties, Mr. Spencer said he spent $568,119,009 for other material. It is believed that track material other than rails is included in this item. The aggregate of expenditures is shown as $1,140,931,000. This is after deducting $19,000,000 saved in the transfer of surplus stocks from well supplied railroads to others in need of materials. Another saving reported was in the sale of $47,000,000 worth of scrap. Mr. Spencer's report, written befor the end of 1919, but just made public, states he expected another $35,000,000 would be saved in the transfer of materials before the first of the present year.

"Practically with the beginning of the year (1919) the war industries board and the fuel administration suspended their control of prices and the allocation of the various products, the result of which was an immediate increase in the cost of some commodities, notably forest products, and a moderate decrease in the cost of fuel and steel products," the report states.

"Entirely new and different problems were presented by the termination of hostilities late in the preceding year. Efforts were directed to the curtailing of purchases wherever it could be done without working hardship or injury to the manufacturing interests whose war time programs had been completely upset and to the reduction of the abnormally large stocks of materials which had been accumulated by the railroads as a war time necessity.

"No new equipment was purchased during the year but the division has been busily engaged in seeing that the materials required for building the cars and locomotives contracted for last year was furnished and the work pushed to completion as rapidly as the circumstances permitted. Up to Dec. 9, 1103 locomotives had been completed and 75,235 freight cars of all types have been received and put in service."

Foundry for Nitro, W. Va.

Washington, Feb. 17.—The director of sales, war department, announces that the first commercial industry to locate at Nitro, W. Va., formerly the war department's "smokeless powder city", will result from the purchase by the Central Foundry & Supply Co., Columbus, O., of a factory site from the original purchasers, the Charleston Industrial Corp., of Charleston, W. Va. The sale has been approved by the ordnance salvage board and the director of sales, in accordance with a contract under which the government sold Nitro to the Charleston corporation last December. The site which was selected by the Central Foundry company consisted of 5½ acres of land and contained such buildings as sheet metal shop, a brass and iron foundry, a pipe and electric shop, a welding shop and numerous smaller structures. The purchasers will establish a branch plant at Nitro.

Stop Structural Strikes

Chicago, Feb. 16.—Spasmodic strikes against certain structural steel contracts on the part of members of the bridge and structural iron workers' union in Chicago have been stopped by an order of the Chicago Building Trades council. The iron workers have been pursuing this course out of sympathy for a union of fabricating employes which was refused recognition by steel fabricating shops. This apparently ends a situation which has restricted steel construction for several months.

Reclaiming Tin Mill By-Products

Considerable Metal Is Recovered from the Tin Dross by Heating and a Large Percentage of the Middlings by Screening—Description of the Liberty Steel Co.'s Plant at Warren, O.

BY JOHN D. KNOX

IN THE winter of 1889, when William McKinley was chairman of the ways and means committee of the house of representatives he was instrumental in carrying a revenue measure from defeat to final victory by a narrow margin of two votes. This measure related especially to a tariff on all imports of tin plate. If the bill had been defeated it would be difficult to guess how far along the tin plate industry of America would be today. In the spring of 1893, shortly after Grover Cleveland had been elected for a second term, a new ways and means committee was successful in reducing the duty of tin plate to 1 cent a pound, its former level. Consequently, for the next four years the growth of the industry was at a low ebb due in a measure to political reasons and because of the fact that makers were not in a position to manufacture tin plate on a quantity basis.

During 1896 when William McKinley was president a bill known as the Dingley bill passed both houses. This bill set up a strong tariff in favor of American tin plate makers, and, from the time of its passage, the tin plate industry in this country made such rapid strides than it was only a few years until the United States led all other countries in the production of this material. Since the United States took the lead no country ever has surpassed her in annual output. Since the early production of tin plate in this country the method of manufacture has undergone little or no change. Perhaps our modern plants of today consist of a larger number of rolling units with their electric drive and more up-to-date subsidiory equipment than the plants built 14 years ago, but the practice remains the same as it was then. Among recent companies to engage in the manufacture of tin plate is the Liberty Steel Co. This company was incorporated about April 17, 1917, for $600,000 for the purpose of building a six-mill plant. A site of 300 acres was purchased about 2 miles west of Warren, O., not far from Leavittsburg, and mill buildings soon began to take shape. At a special meeting of stockholders, April 29, 1918, the stock was increased to $1,500,000, the funds being used for working capital. On Feb. 13, 1919, a further increase of $1,000,000 in common and $500,000 in preferred stock was authorized. About March 10, 1919, the Trumbull Steel Co., Warren, O., obtained an option on a majority of the common stock and by July 1, 1919, the Liberty Steel Co. became its subsidiary company. Meanwhile, two additional stands of rolls had been built at the Liberty plant, which with the original installation of eight units, gave the Trumbull company a 10-mill plant

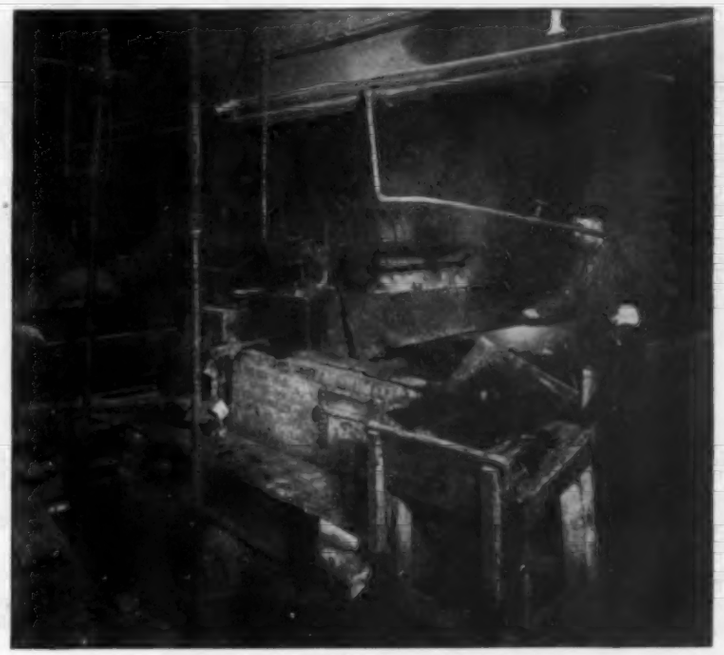

FIG. 2—MACHINE USED FOR COATING BLACK PLATE WITH TIN. THE POT HOLDS 11,000 POUNDS OF METAL AND 800 POUNDS OF PALM OIL. POWDERED COAL IS USED FOR KEEPING THE TIN IN A MOLTEN CONDITION

FIG. 1—BLACK PLATES ARE CLOSE ANNEALED IN POTS OF THIS TYPE IN ORDER TO GIVE THEM A SOFT TEXTURE PRIOR TO FURTHER WORKING. THE COVERS ARE TOPPED WITH CLAY IN ORDER TO PROTECT THEM FROM THE DIRECT ACTION OF THE FLAME

with an output of 750,000 base boxes.

Production began in May, 1918. The main mill building is 170 x 520 feet with two 30-foot leantos, built one on each side. The building consists of two bays running east and west. The hot mills are housed in the north bay and the heating furnaces in its leanto; the cold mills, of which there are 10 built in tandems of twos, are centrally located in the south bay. The latter bay also houses the black and white annealing furnaces and pickling machines. Paralleling the main buildings is a 100 x 520-foot structure which houses the tinning and boxing departments. The leanto along the north side of the tin house is divided into seven different compartments and the leanto along the south side into eight compartments, each of which contains a tin pot. The warehouse is located in the west end of this building. Most of the water used at the plant is pumped from three wells. Connection also is had with the Mahoning river, 1½ miles north of the plant in case it becomes necessary to use river water.

Specification of Semifinished Material

Tin bars, from which the black plates are rolled, are brought into the northern end of the hot mill building in railroad cars and piled according to their specification. The bars are ordered from 7 to 10 inches wide and from 3/16 to ¾-inch thick, depending upon the size and gage of the black plates to be rolled. Usually this semifinished material is delivered to the mill in 30-foot lengths. In preparing the bars for the hot mill they are cut into short lengths which correspond to the size and gage of plates on the mill schedule. Two shears of the crocodile type are provided. One is operated by a 40-horsepower Westinghouse motor and the other by a 25-horsepower Allis-Chalmers motor.

Sheets Sheared Two at a Time

Two 30-foot sheet bars are placed one on top of the other on a roller table on the approach side of the shear and then are moved between the blades until they strike a stop gage. This gage is set at a certain distance away from the knives so that when the latter are brought into action the cut section will be suitable for producing black plates of the desired specification. After a cut has been made the short sections are piled on heavy wooden skids and either stocked until the mills are ready for them or they are taken by the crane to any one of the 10 heating furnaces. Two cranes, one of 25-ton and the other of 10-ton capacity, serve the hot mills. Both were built by the Pawling & Harnischfeger Co., Milwaukee.

The furnaces are fired with powdered coal. The latter in lump form is brought into the plant along the north side of the hot mill building in railroad cars, these being spotted over a hopper which is built between the tracks. The hopper feeds into an electrically driven jaw crusher which in turn discharges onto a belt. The latter conveys the crushed coal to a cup conveyor which elevates it to the top of the powdered coal building. Here the coal slides into a large vertical pipe which is equipped near the bottom with an electrically operated valve for feeding a constant supply of fuel into a horizontal drier similar to a cement kiln.

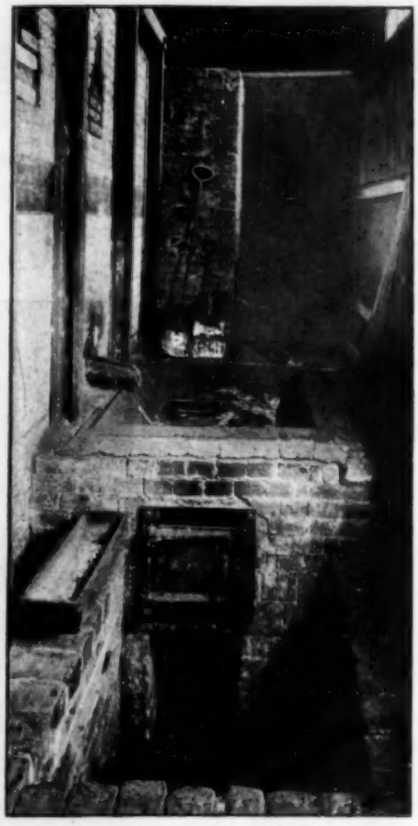

FIG. 4—AS TIN SEPARATES FROM THE DROSSES, IT FLOWS INTO THIS BASIN LATER TO BE TRANSFERRED INTO THE MOLD SHOWN NEAR THE FIRING DOOR

Fuel Shortage Gives An Alarm

A screw conveyor, which operates at right angles to the drier, conveys the moisture ridden fuel to a pulverizer. This is driven by a 175-horsepower Allis-Chalmers motor and crushes the coal to a powdered form. The pulverizer was built by the Raymond Bros. Impact Pulverizer Co., Chicago. An electrically driven fan blows the powered coal into an overhead storage hopper from which it is distributed by another fan to the sheet and pair furnaces, annealing furnaces and the tinhouse substation. From this substation the coal is distributed to the various tin pots where it is used for keeping the tin in a molten condition. In case the various distributing lines fail to deliver fuel to the furnaces a whistle automatically blows in the hot mill department and the crews close the supply valves on every furnace. A signal also sounds in the powdered coal plant. The latter was built by the Bonnot Co., Canton, O.

Each furnace in the hot mill department is built with two separate hearths and is known as the sheet and pair furnace. The hearths are built side by

FIG. 3—TIN DROSS, THE SCUM WHICH FORMS ON TOP OF THE MOLTEN TIN DURING THE COATING PROCESS, IS SHOWN IN THE PANS PILED ALONG THE SIDE WALL. PIGS OF TIN EXTRACTED FROM THESE DROSSES ARE SHOWN AT THE LEFT

FIG. 5—MACHINE FOR SEPARATING THE OIL-SOAKED AND DRY MIDDLINGS. ANY METALLIC SUBSTANCES ARE ENTRAPPED BY MAGNETIZED STRIPS OF STEEL

side and are served by individual combustion chambers. The pair furnace is used for heating the tin bars to the proper rolling temperature and the sheet furnace for heating the sheets to the final rolling temperature as will be explained later.

Heating Must be Done Slowly

About 40 or 50 tin bars are placed on the hearth of the pair furnace in piles of three or fours. The heating process is executed slowly in order to avoid scaling the bar for if scale is rolled into the steel a defective plate results. When the bars have been brought up to the desired temperature, they are withdrawn from the furnace in pairs and delivered to a rougher stationed in front of the rolls. The roll train consists of 10 stands of 34, 36, and 40-inch rolls arranged side by side. A 1500-horsepower Westinghouse motor is interposed between Nos. 5 and 6 stands. Current is purchased from the Trumbull Public Service Co., Warren, O. The motor is connected to the mill spindles by means of cast-steel herringbone reduction gears, which were built by the Fawcus Machine Co., Pittsburgh. These gears effect a reduction of 8 : 1. In order that the mill crews may work more advantageously during hot weather, the hot mill department is equipped with an air blast cooling system, the pipes of which direct currents of air on the the workmen stationed in front of the rolls.

How Roll Stands Are Built

The rolls run in brass bearings and are mounted in cast-iron housings. These rest on heavy shoe plates. Each housing is fitted with a vertical screw on top of which is mounted a notched wheel. A lever is brought down from each wheel to within easy reach of the operator both levers being yoked together by a spanner bar. Moving either lever to the left forces down the top roll and gives the desired gage to the steel as it is being rolled. Only the bottom roll is driven, the top roll operating by friction.

When the rougher receives the heated pair of bars he passes them separately between the rolls four or five times, the catcher on the other side returning them over the top roll. Between passes the screw boy brings the rolls to gage by manipulating the screw-down lever. The bars are served crosswise to the rolls. The practice followed is to rough several pairs of bars consecutively before executing the second step in the rolling process. After the pieces are elongated as far as possible they are matched, that is, they are placed one on top of the other, and thrown down the standing to a workman who places them in the sheet furnace. Here the temperature equivalent to that lost in the rolling operation, is restored,

When the entire heat has been matched and placed in the sheet furnace the first pair of partially rolled sheets are removed from the sheet furnace and are thrown down the standing to the roller, who passes them two or three times between the rolls. When the catcher returns the pair over the top roll for the last time, the screw boy grasps the piece with a pair of tongs and takes it to the doubling shear about 10 feet away. Each stand of rolls is served by a shear of this type, which consists of a squeezer built at right angles to and in combination with a crocodile shear. When the jaws of the squeezer coincide, the sheer blades are in an open position and vice versa. Both the squeezer and shear are actuated by a single 5-horsepower Allis-Chalmers motor. The 10 doubling shears were built by the Hyde Park Foundry & Machine Co., Hyde Park, Pa. This company also built the hot and cold mills, and the squaring shears.

Sheets Are Folded and Packed

After the bond between the two plates is loosened, the sheets are folded and then flattened under the squeezer, making four thicknesses. The pack, as it now is known, is thrown down the standing and returned to the sheet furnace for further heating. Meanwhile a pack, which previously has been heated, is passed between the rolls. When extended as far as desired the bond between the sheets again is loosened and the sheets folded, the doubled end being flattened under the squeezer. This gives a pack of eight sheets with one end closed completely and with the other end closed partially. The pack, how-

FIG. 6—ONE OF THE STORAGE POTS INTO WHICH THE PALM OIL FLOWS AFTER BEING MELTED IN THE STEAM-HEATED COMPARTMENTS. TWO POTS, ONE FOR EACH COMPARTMENT, ARE PROVIDED. THE OIL IS KEPT FLUID BY MEANS OF STEAM COILS

ever, must have at least one end opened completely before being served to the rolls otherwise it would buckle and result in defective stock. Consequently, one end of the pack is sheared. The steel then is returned to the sheet furnace for final heating. When the last pack is placed in the furnace, the first pack is removed and the roller passes it between the rolls until the steel is extended to the length desired.

A squaring shear similar to the unit shown in Fig. 7, is provided for each stand of rolls. The shears are placed in the center of the main mill building, each shear being located about 25 feet from the rear side of its particular stand of rolls. After the finishing pass the pack is thrown on the standing midway between the shears and the rolls

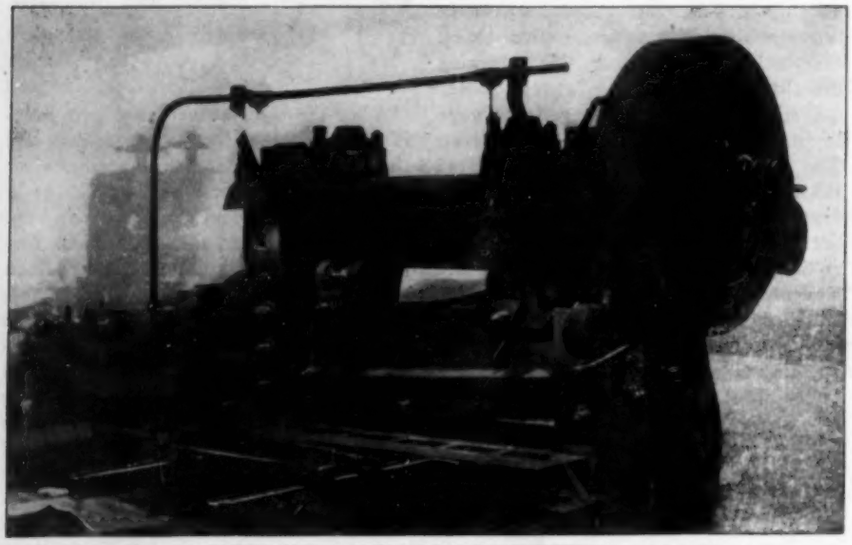

FIG. 7—ELECTRICALLY DRIVEN SHEAR FOR SQUARING UP THE SIDES AND ENDS OF THE PACK SHORTLY AFTER IT LEAVES THE HOT ROLLS

and left there to cool. When sufficiently cool enough to handle, the packs are taken to the squaring shear, laid flat between the gap of the knives, and are cut through the center. The sheared ends are placed against a guide, shown in Fig. 7, which is set a certain distance from and parallel with the shear knives, and the opposite ends trimmed. Finally, by placing the trimmed ends in turn against a second guide and bringing the shear into action, the sides are trimmed. The result of the shearing operation is 16 black plates with their edges as square as it is possible to make them.

When hot pieces of steel are rolled together, as in the case of the black plates being rolled in packs, the scale which is due to the oxidizing atmosphere in the heating furnace, acts as a cementing medium. Consequently, it is necessary to separate the sheets before continuing with the process. A workman, known as the opener, lifts one pack at a time from the pile of squared up sheets and drops it on steel plate in such a manner as to bend one corner. The opener wears canvas gloves, the palm of which is protected by a thick piece of leather. In the center of this hand-leather is attached a small disk of lead which he uses for peeling the plates one from another, the bent corner on each pack aiding him in performing the operation.

After the packs have been opened, the sheets are piled on wooden skids and are taken by a crane to a floor scale, which is located centrally, where they are weighed. The tonnage of plates from each mill is kept separate until it is weighed because the wages of the mill crew and shearman are determined from the aggregate tonnage rolled on their particular mill which passes over the scale during an 8 hour turn. After weighing, the plates are transferred to the black pickling department. The latter is located in the bay which is adjacent to the hot mill bay and which also includes the black annealing, the cold rolling, the white pickling and the white annealing departments. These departments are served by a 10-ton crane built by the Pawling & Harnischfeger Co., Milwaukee and a 15-ton crane built by the Case Crane & Engineering Co., Columbus, O.

When received in the black pickling department the sheets are covered with a light irregular coating of scale which must be removed before the plates can be tinned. To provide clean surfaces the sheets are immersed in a diluted solution of sulphuric acid. The pickling process is performed by a machine which consists of four horizontal arms. These radiate from a central plunger and carry slatted bronze cradles. The plunger is elevated by steam pressure and descends by gravity. The plates are piled in the racks and are plunged up and down in an acid vat at the rate of about 30 strokes per minute. In due time the crate of sheets is subjected to a similar plunging operation in a vat of clean water. While the rinsing is being performed, a new batch of plates is being agitated up and down in the acid vat. By means of this action the surface of the steel is left clean.

After the black pickling operation the sheets are inspected for defects and then are piled on a cast-iron annealing bottom as shown in Fig. 1. This pile is covered with an inverted box or lid, sand being shoveled around the base to exclude the air. Bottoms with and without covers are shown in Fig. 9. The box is picked up by the crane, transferred to the black annealing furnaces located at the western end of the building, and set on an electrically driven charger. When four pots are assembled, the charging machine and its load is moved slowly inside the annealing furnace by means of racks and pinions. The table upon which the pots are carried is lowered by a heavy screw actuated by a 5-horsepower motor leaving the pots to rest on two brick piers. The charging machine then is removed from the furnace, the doors closed and the charge heated for 18 or 24 hours depending upon the specification of the plates. Eight furnaces, fired with powdered coal, are provided for annealing the black plates. The annealing operation is essential in order to remove the strains and stresses which are imparted to the sheets during the rolling process and to give them a soft texture for further treatment.

When the pots have been in the furnace for their allotted time, they are withdrawn and allowed to stand capped until cool enough to handle. The cover then is removed and the bottom containing the annealed sheets transferred near the center of the bay to the cold rolling department. On account of the plates having undergone a slight welding action due to the annealing treatment, the piles are sledged thoroughly with steel sledge hammers in order that the plates may be peeled apart easily. After the openers separate the sheets they pile them in front of the cold rolls. Ten cold mills are provided. These are arranged in five sets of two tandems each and are driven through reduction gears by a 400-horsepower Westinghouse motor.

The surface of the cold rolls are kept smooth at all times by polishing with slabs of abrasive material inset in wooden blocks. Since the rolls on the cold mill are not subjected to the high temperatures which occur in the hot rolling process, they are machined straight so that when placed one on top of the other their surfaces coincide.

The hot rolls, however, are turned slightly concave in order to take care of the expansion which they undergo during the rolling process. A 44-inch roll turning lathe is provided for dressing and turning the rolls. This is centrally located between the cold and hot mill departments. The rolls after being machined are placed in tandem on rails laid near one end of the lathe.

Second Anneal Necessary

Each pickled and annealed plate is fed by hand between the first set of cold rolls, the pieces being directed into the second set by leather belt conveyors which operate at the same speed as the rolls and connect the two stands. Each stand of cold rolls is equipped with two pairs of screwdowns in order to permit a finer gage adjustment. The plates, now known as full cold rolled, pickled and annealed stock, again are piled on annealing bottoms, covered, sanded and placed in the white annealing furnaces which are built in the leanto nearby the cold mills. A second anneal is necessary to undo the slight hardness imparted to the plates during the cold rolling process. The temperature to which the plates now are heated is considerably milder than that maintained during the black anneal. After eight to 12 hours the pots are removed from the furnace and allowed to stand capped as before until they cool sufficiently to handle. The plates then are put through the final pickling process known as the white pickle in order to remove any scale and to prepare the plate for the tinning operation. The machines used in the black and white pickling operation were built by the Mesta Machine Co., Pittsburgh. The acid solution is kept hot by steam generated in two 300-horsepower boilers. A reserve supply of sulphuric acid is stored in lead lined tanks elevated nearby the pickling vats.

Plates Stored Under Water

After the sheets are rinsed they are stored in water boshes, the water covering the sheets entirely in order to arrest oxidation. These boshes then are stored at the eastern end of the bay until the tinhouse is ready for additional plates. The tinhouse, as previously mentioned, is 100 x 520 feet and includes 15 tinning machines, one of which is shown in Fig. 2. Each tinning machine occupies a separate niche in the leantos and is directly connected with an individual ventilator. Consequently, the most desirable atmospheric conditions are assured at all times. A hot air heating system also is provided in the tinhouse. Each tinning machine includes a rectangular cast-iron pot about 5 x 9 feet, in which is melted 11,000 pounds of tin, 800 pounds of palm oil and a few pounds of zinc chloride. The pot rests on a firebrick setting and is heated by powdered coal supplied from the substation located near the motor room of the cold mills.

Molten tin occupies the space in the lower part of the pot. On the charging side of the tinning machine and partially submerged in the tin is a cast-iron trough containing the zinc chloride. The latter is a flux, its function being to clean the surface of the plate so that the steel will amalgamate with the tin. Palm oil is confined in a box on the delivery side of the tin machine and floats on top of the tin. The water boshes containing the white pickled plates are transferred by electric tractors from the storage department in the main mill building to the various tinning machines. The tractors were built by the Elwell-Parker Electric Co., Cleveland, and are of 4000 pounds capacity.

The plates are removed from the water boshes in batches of 10 or 12 and are placed on a table at the charging side of the machine. The tinman takes one plate at a time and by a pronged rod pushes it down through the flux and into the molten tin until the plate is gripped by a pair of feeding rolls. These rolls force the plate between an apron guide which directs it upward out of the molten tin into a second set of rolls, which is submerged in palm oil. The second set directs the plate upward through the palm oil and between a third set of rolls, which are located on top of the oil and are exposed. The second and third set of rolls not only act as conveyors but squeeze off any excess tin and spread the coating over the surface evenly. The palm oil tends to effect an even flow of metal over the plate and to give a high polished surface.

This last set of rolls ejects the tinned plate upward into guides which directs it down over a chute and onto a conveyor leading to a nest of cleaning rolls. Five of these rolls are covered with cotton flannel. A screw conveyor, built between the first and second set of rolls, distributes middlings across the path traveled by the tinned plate. Middlings are composed of rye, wheat and peanut hulls and absorb the palm oil carried over from the tin pot. The middlings are carried toward the discharge end of the machine along with the tin plate and when near the end they fall into a hopper which feeds onto a cup conveyor. The latter elevates them again to the screw conveyor which returns them to the cleaning machine. By means of this arrangement the middlings are used over and over again. As the tinned plate nears the discharge end of the machine it passes between two buffing rolls which operate at different speeds and apply a polish to the surface of the plate. Two brushes extend across the path traveled by the coated plate and these prevent the middlings from being carried out of the cleaning machine.

The buffing rolls eject the finished plates onto a pile from which they are taken to long wooden tables for classification. Here the plates are inspected and assorted into primes, wasters, menders and waste wasters. The primes and wasters then are counted, weighed and either boxed and set aside to apply on orders, or, they are transferred to the slitting machines where they are cut in sizes according to the specification. Two 56-inch slitting machines, which were built by the E. W. Bliss Co., Brooklyn,

FIG. 8—ELECTRICALLY DRIVEN SLITTING MACHINE FOR CUTTING THE FINISHED PRODUCT TO THE SPECIFIED SIZE. TWO ARE PROVIDED

are provided. One of the slitting units is shown in Fig. 8. The tin strips, which accumulate at either side of the machine at the discharge end, are wired in a bundle and sold to a company for detinning purposes. Primes are first quality plates. A plate, which has uncoated spots, blisters, round corners, ragged edges or which is not square, is classified as a waster. A plate, which can be refed into the tinning machine to make a prime plate, is known as a mender. A waste waster is a badly bent or torn plate and practically is worthless except for detinning purposes.

As the tinning process continues a scum or dross forms on top of the molten tin. Every two weeks the tining machinery is removed from each side wall. This drain conducts the molten tin to a trough built on the outside of the furnace which in turn discharges into a cast-iron basin. The latter, shown in Fig. 4, rests on a firebrick setting. When a sufficient amount of tin has accumulated in the pot, a fire is started underneath. The molten tin then is dipped out and poured into small iron pig molds, the resultant pigs weighing about 105 pounds each.

Dross and Used Middlings Sold

Enough dross is treated in 12 hours to produce 12 pigs of tin aggregating about 1260 pounds. Approximately ½-ton of coal is used to effect this reclamation. The tin recovered, of course, is recharged in the tinning pots. After all the tin has been extracted the dross is raked out of the furnace and shoveled in a pile. When enough of this material has accumulated it is sold to a chemical company in the Pittsburgh district. This company treats the dross further and extracts about 40 per cent additional tin. The material which remains then is sold to a paint manufacturer who uses it as a base for a certain grade of paint.

As previously mentioned the function of the middlings is to remove the excess palm oil from the plate as it passes through the cleaning machine. About once each week it is necessary to remove the oil soaked middlings from the cleaning machine and add new stock. The used material is transferred to the cereal building, 50 x 200 feet, which parallels the tinhouse. Here it is dumped into a floor-hopper which feeds into a vertical cup conveyor. The latter elevates the material into an overhead hopper which discharges onto a shaking screen. The lumps of oil soaked middlings travel across the screen and are directed at one side to the ground.

The dry middlings, which pass through the screen, slide slowly over a chute. Crosswise on this chute and directly in the path traveled by the dry middlings are two magnetized strips of steel, placed about 6 inches apart. These are shown in Fig. 5. By means of this arrangement any pieces of iron, steel or tin, which may have found their way into the middlings during the cleaning process are held by the magnetized strips. A pusher moves across each strip continually and pushes any entrapped pieces of metal to the sides of the chute. The discharge end of the chute converges, the middlings falling directly into a burlap bag. The middlings then are sold for cattle feed.

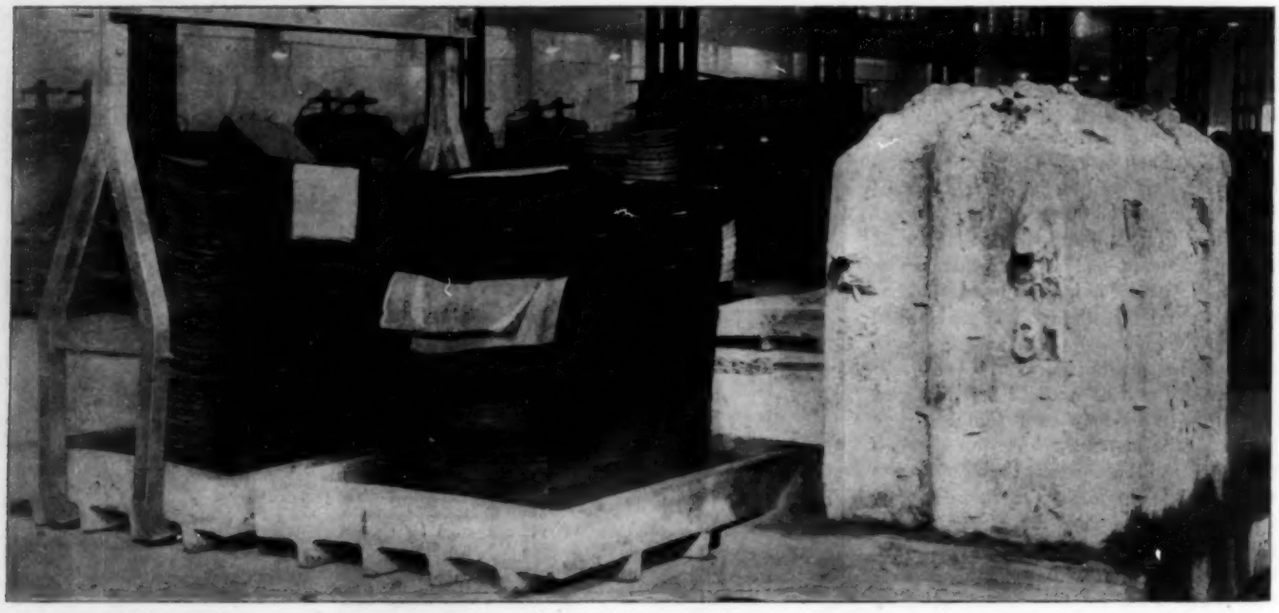

FIG. 9—IN THE ANNEALING PROCESS BLACK PLATES ARE PILED ON CAST-STEEL BOTTOMS AND ARE CAPPED, SAND AND PLASTIC CLAY BEING PLACED AROUND THE JOINT TO EXCLUDE ANY AIR. THIS ILLUSTRATION SHOWS THE POSITION IN WHICH THE PLATES ARE PILED ON BOTTOMS AND AN ANNEALING POT READY FOR THE FURNACE

pot. The dross is skimmed off the tin bath and placed in pans about 12 x 24 inches. The floor around the tin pot is swept and the dirt placed in the pans also. These pans then are transferred to the reclamation department and piled to one side, as shown in Fig. 3. A furnace with about a 7 x 15-foot hearth, is housed in this department and is heated with coal. The latter is shoveled in the fire box at one end, the gases traveling lengthwise over the hearth and through an underground flue to a chimney.

Method of Tin Extraction

From four to five pans of dross are scattered over the hearth of this furnace, the dross being puddled or rabbled at intervals for about three hours. During this time considerable tin separates from the dross and flows into a drain built at hearth level near the center of one

Preparing the Palm Oil

A novel arrangement is used at the Liberty plant for preparing the palm oil for the tin pots. At the eastern end of the cereal building are two compartments provided with interior steam coils as shown in Fig. 10. A hogshead of palm oil is rolled in either compartment, the door closed and steam passed through the coils for a few hours. When the oil is in liquid form a hole is made in the hogshead. The oil flows onto the floor of the heating chamber and by means of an opening in one side wall, is conducted into a depressed storage pot on the outside. This pot also is equipped with steam coils as shown in Fig. 6 for the pur-

pose of keeping the oil hot. The oil then is strained and is transferred to the tinhouse as required.

The practice followed at many mills in this country is to chop in the head of the cask and transfer the oil in grease form to the tin pots. However, by first preheating the oil and getting it into liquid form, the tin bath on the palm oil side is held at a more even temperature than when the grease is added in the cold state.

1228 By-product Ovens Completed in 1919

The by-product coke capacity of ovens in the United States was increased by 1228 ovens in 1919, according to a report just made by the geological survey. Of these 510 were additions to existing plants and the remainder were of new construction. In addition, 853 new ovens were under construction at the close of 1919, according to the report. Despite the increased capacity last year, production fell off 827,000 tons, or 3 per cent, according to the report which placed the year's output at 25,171,000 tons.

The new plants built last year were as follows: International Harvester Co., South Chicago, 88 Wilputte ovens; Steel & Tube Co. of America, Indiana Harbor, 120 Semet-Solvay; Ford Motor Co., Detroit, 120 Semet-Solvay; Jones & Laughlin Steel Co., Pittsburgh, 240 Koppers; Rainey-Wood Coke Co., Swedeland, Pa., 110 Koppers; and Providence Gas Co., Providence, R. I., with 40 Koppers.

Additions to existing plants were: Tennessee Coal, Iron & Railroad Co., Fairfield, Ala., 77 Koppers; Citizens Gas Co., Indianapolis, 40 Wilputte; Indiana Coke & Gas Co., Terre Haute, 30 Koppers; Bethlehem Steel Co., Sparrows Point, Md., 180 Koppers; Seaboard By-Product Coke Co., Kearny, N. J., 55 Koppers; and Carnegie Steel Co., Clairton, Pa., 128 Koppers.

Plants under construction Jan. 1 were as follows: Birmingham Coke & By-Products Co., Birmingham, 50 Koppers; Sloss-Sheffield Steel & Iron Co., Birmingham, 120 Semet-Solvay; Tennessee Coal, Iron & Railroad Co., Fairfield, Ala., 77 Koppers; St. Louis Coke & Chemical Co., Granite City, Ill., 80 Roberts; Donner-Union Coke Corp., South Buffalo, N. Y., 150 Koppers; Lackawanna Steel Co., Lackawanna, N. Y., 60 Semet-Solvay; Cambria Steel Co., Johnstown, Pa., 60 Cambria-Belgium; Jones & Laughlin Steel Co., Pittsburgh, 60 Koppers; Pittsburgh Crucible Steel Co., Midland, Pa., 100 Koppers; Domestic Coke Corp., Fairmont, W. Va., 60 Koppers; and Steel & Tube Co. of America, Mayville, Wis., 36 United-Otto.

A report has been received by the United States bureau of mines, to the effect that a new company has been organized to operate a mica mine north of Ta-chien-lu, in the province of Ssu-Chuan, China. The company, which is entirely under Chinese management and control, has a working capital of $10,000. While comparatively new, the mine has been worked before, and apparently with some success. The mica is said to be of good quality. It is claimed that the deposit will supply a limited amount of mica that will cut in pieces a foot square or over, and larger quantities of smaller sizes. The chief difficulty is transportation, for it is reported that a ten days' journey, part of it over mountain trails, will be necessary to transport the mica from the mine to Yachow, the nearest practical waterway. It is probable, therefore, that the output of the mine will be limited, at least for some time to come.

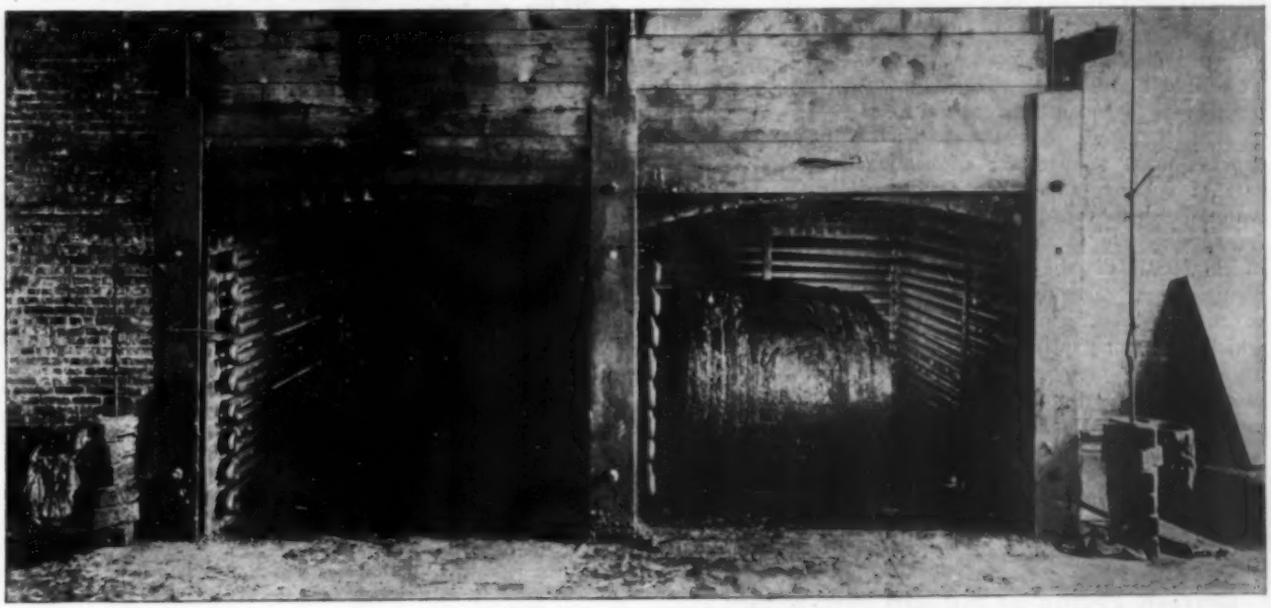

FIG. 10—PALM OIL, PRIOR TO ITS BEING USED IN CONJUNCTION WITH THE TINNING PROCESS, IS MELTED IN COMPARTMENTS LINED WITH STEAM COILS. THE HOGSHEAD THEN IS PUNCTURED AND THE OIL FLOWS THROUGH AN OPENING IN ONE SIDE WALL INTO A STEAM-HEATED, CAST-IRON STORAGE BASIN. FROM HERE IT IS USED AS REQUIRED

Discusses Specifications for Steel

A writer in the *London Times Engineering Supplement* states that at a time when new fields of research are being opened up and attempts are in progress to improve the quality of the steel, the campaign in favor of standard specifications suggests a danger that progress may be retarded. He points out that this is a mistaken view. If the movement in favor of standard specifications has halted, it is probably because investigators have cast doubts upon so many subjects, and experiments have often yielded results which have made it impossible to standardize either composition or tests. At the same time many believe that a greater degree of standardization in specifications might be achieved

without any sacrifice of quality and with appreciable advantages as regards cost of production. What is required is a closer co-operation between the engineer and the steelmaker, so that the amount of discard may be reduced and a more uniform practice reached in connection with analysis and mechanical testing. It is known that steelmakers have introduced methods of manufacture which ought to enable the percentage of discard so often insisted on in specifications to be materially reduced.

If engineers concerned with drawing up specifications would make it clear what is really required by the user rather than attempt to play for safety by overloading the specification with unnecessary stipulations, the interests of both the steelmaker and the user would probably be better served than by the existing practice. Too rigid attention to chemical composition is frequently a mistake, as it is well known that the particular process used, temperature of casting, rate of cooling, and other details of manufacture may produce marked differences in the mechanical properties of material of the same chemical composition. Steelmakers are alive to the importance of these subjects, which are constantly occupying the attention of their research departments, and they know that a steel could be made to meet all the tests which might be imposed on it by the engineer and yet be unsuitable for the particular service for which it is required.

British Firms to Retain Women Workers

Approximately 5000 firms in Great Britain have been asked by the Women's Industrial league for a statement of their experience of women as industrial workers. Over 1400 replies have been received, covering a wide field in engineering and other trades.

The replies show that 1422 firms were employing 79,700 women at the end of May, 1919, as compared with 43,200 before the war, and 245,300 during the war. Of 382 firms who employed women before the war, 67 propose to increase the number, in consequence of the larger experience of women's work gained by them; while of 764 who employed women for the first time during the war, 228 propose to retain them. These firms do not comment on the present labor situation. A further 97 firms state that they would be willing to retain women but for trade union opposition. Taking all the figures, the estimate is that over 60 per cent of those who have tested women's work are ready to continue employing them.

Not only Oxford and Cambridge, but several of the modern universities admit women to their engineering courses; and many women are engaged in engineering work in Scotland, as well as in London and various provincial centers of English industry. Among other openings for women are aircraft manufacture, furniture making, and the toy industry.

Move Large Oil Tank by Flotation

Recently the Texas Co. faced the problem of moving a 215-ton oil tank at Providence, R. I., for the purpose of repairing its foundation. The tank is 115 feet in diameter, 35 feet high and has a capacity of 65,000 barrels of oil. In order to repair the foundation it was necessary to move the tank completely clear of its former position and engineers after considerable study evolved the scheme of moving the tank by flotation. An earth wall about 3 feet high existed around the tank, placed there in order to create a moat for fire protection. This circle was extended at one point to allow the moving of the tank away from the foundation, and the area within the enlarged dike was pumped full of water. The work was carried on in spite of cold weather, the water being kept from freezing by the use of steam pipes. It took nearly two weeks to fill the area with sufficient water but finally the tank floated free of its foundation. It was pointed out that it would have been impossible to jack the structure up and move it on rollers because of the uneven support afforded and the resultant strain on the joints. The water will be pumped so that repairs can be made and later the same method will be employed to move the tank back to its original foundation.

An appropriation of 4,000,000 pesos, about $2,000,000, has been authorized by the Mexican government for the purchase of rolling stock for the national railways of Mexico. Most of the new equipment will be secondhand, and will be purchased in the United States. The shortage of cars and engines on the national railways is such that it is impossible to move but a small percentage of the freight offered. Thousands of box cars have been wrecked by bandits and revolutionists. Large orders for materials have been placed in the United States.

Give Results of Examining Mill Coal Dust

Examination of samples of so-called mill dust taken from steel mills with powdered coal fuel installations has enabled the United States bureau of mines to determine and warn against the explosion hazard arising from partially consumed coal dust. In a bulletin on this subject, L. D. Tracy of the bureau states that this dust, which accumulates on roof trusses, platforms over furnaces, the outside of pipe lines and electric cables, and even on the roofs of buildings, was submitted to chemical analyses, microscopic examinations and flame and explosion tests.

Chemical analyses showed that the volatile matter in the dust ranges from 6.3 to 23.54 per cent, fixed carbon from 50.88 to 67.08 per cent, and ash from — per cent to 32.16 per cent, while samples of pure coal dust showed volatile matter from 30.5 to 36.81 per cent, fixed carbon from 46.86 to 52.48 per cent, and ash from 9.26 to 21.84 per cent. Microscopic examination showed the dust to vary from thoroughly coked to partially coked particles.

Explosion tests indicated that the average pressures exerted vary from 4.6 to 14.5 pounds per square inch, the latter figure being but slightly less than that for pure coal dust. Further tests in larger explosive apparatus demonstrated that the division point between mill dust which will not explode and dust which will explode is reached when the dust contains about 11 per cent of volatile matter. Flame tests indicated that serious fires are liable to result when the dust comes in contact with hot metal or slag.

Precautionary measures suggested by the bureau include thoroughly cleaning all places where dust will collect. Electric wires should be in conduits and all electrical machinery should be so grounded that static sparks are eliminated. The blowing fan for forcing powdered coal through the pipes never should be shut down until all of the coal has been forced from the pipes otherwise the back draft resulting from closing down a furnace may draw sparks into the pipes where they will smoulder. When the fan is turned on again, the sparks may be fanned into flames to ignite the dust in the feed line and may cause an explosion. Gas burners on pulverized coal furnaces should be removed when not in use to prevent their collecting dust which might be ignited when the gas is turned on.

Recharging Furnace Flue Dust

Compares Operating Data of Furnaces Producing 73 and 290 Pounds, Respectively, of Flue Dust Per Ton of Iron — Reduction in Velocity and Pressure Control of Gas Leaving Stack Desirable

BY R. W. H. ATCHERSON

BLAST furnace flue dust is one of the most troublesome operating factors in the iron and steel industry. Several successful operators claim that it is useless to recharge raw flue dust because the furnace would never have blown it out if it had been suitable material for blast furnace consumption. Many operators who have made persistent efforts to return raw flue dust to the furnace have decided that it is very often false economy to do so. Yet some very remarkable results have been attained at the Ohio works of the Carnegie Steel Co. through recharging raw dust. The plant comprises six modern blast furnaces. Up to 1909 about 300,000 tons of flue dust had accumulated in the stock piles. During the past 10 years, there have been recharged into these furnaces all of the flue dust recovered from the furnace operations, the entire stockpile of flue dust, and nearly 80,000 tons of dust shipped from other furnaces of the Carnegie Steel Co. The results obtained are shown in Table I.

Table I

Blast Furnace Operating Data, 1909 to 1919

Year	Total ore consumed, tons	Per cent, Mesaba ore	Tons, flue dust used	Tons flue dust produced	Pounds, coke per ton iron	Iron produced, tons	Actual yield, per cent	Theoretical yield per cent	Per cent furnace loss or gain
1909 } 1910 } 1911 }	4,157,485	83.61	457,103	198,544	2101	2,420,815	57.23	54.99	Gain 2.24
1912	1,790,822	84.94	111,184	88,466	2206	978,604	53.78	54.33	Loss 0.55
1913	1,606,026	82.80	90,370	100,371	2340	862,962	52.88	54.54	Loss 1.66
1914	1,149,869	82.87	111,691	60,959	2091	655,596	55.60	55.21	Gain 0.39
1915	1,955,195	80.29	111,322	81,079	2085	1,090,579	54.39	54.54	Loss 0.15
1916	2,027,792	85.65	118,980	96,630	2075	1,134,429	54.72	54.78	Loss 0.06
1917	1,769,028	86.22	112,985	102,791	2143	994,822	54.65	55.53	Loss 0.88
1918	1,720,585	92.36	94,852	102,335	2210	950,076	54.43	55.10	Loss 0.67

In common with a great many blast furnace men, the operators at Indiana Harbor have tried many schemes for reducing the amount of dust carried out by the gas and numerous ways of recharging it, in both the raw and the sintered state. They have operated on inconsiderable percentages of Mesaba ore and again have used nothing but Mesaba for years at a time. Yet they are still making a great deal of flue dust, probably not any more than the average blast furnace using fine ores, but the amount is out of all proportion to any physical changes in the ores and has never been as low as in some furnaces that are being driven at about the same rate of pig iron production.

Every raw material charged into the furnace and every piece of equipment employed in its operation affects the amount of dust carried over by the gas in proportion to its influence on the smooth, regular descent of the charge column and on the chemical reactions that must take place in the blast furnace. When Mesaba ores were first introduced, the frequency of blast furnace slipping and rolling caused very high losses in furnace yields; but a gradual development of furnace lines and equipment and a better understanding of how furnaces using these ores should be charged and blown, have greatly reduced flue dust production. In 1902, the blast furnaces of the United States Steel Corp. used 43.8 per cent Mesaba in their ore mixtures and the loss in furnace yield averaged 3.6 per cent. During the last 10 years, over 80 per cent Mesaba has been used each year yet the average loss for that period has been a full per cent less. In comparing individual furnaces in the same group or comparing furnace groups, however, it cannot be said that any true relationship exists between the furnaces using 60 per cent Mesaba and those using 100 per cent, when considering the flue dust produced or the loss in furnace yields.

The importance of properly grading and thoroughly mixing each grade of ore is readily appreciated when it is considered how absolutely essential it is to keep the physical and chemical balance of the slag at all times as nearly a constant as possible. Occasionally, operators are obliged to use raw materials without the guidance of an accurate chemical analysis or without a previous knowledge of the physical structure or characteristics. The results on the product and the practice of the blast furnace are invariably detrimental. It usually takes several days of experimenting of an empirical nature to bring the furnace back to normal action, which is only attained by correcting the slag balance. The causes and effects of disturbing this balance with the attendant increase in flue dust production are well known.

The writer believes much of the opposition to the use of fine ore blast furnaces is superficial and prejudicial. Burdens composed entirely of fine ores are being very successfully handled by furnaces built on lines as developed today. High flue dust production, where it is prevalent with high percentages of fine ores in the burden, is frequently due to an improper mixing or sizing of the ores. Where no thorough effort is made to counteract the natural segregation of lumps and fines at each rehandling from the mines to the furnace, there are bound to exist in the blast furnaces strata of ore of a finer consistency than contiguous layers. The obvious requirements of these finer and denser layers is an augmented gas pressure, sufficient to force through the denser layer. This action is rather more violent than would be the normal flow of gas and is attended by a greater disturbance of the stock, resulting in a larger production of dust than would follow the passage of the gas through the more open layers of ore. As a means of limiting the segregation of the fines into layers in the furnace, the method of charging is of incalculable value as a corrective feature but is not sufficiently thorough to counteract indifferent handling at the mines and docks. The intimate mixture of each

Copyright, 1920, by the American Institute of Mining and Metallurgical Engineers, Inc.; from a paper presented at the New York meeting of the institute, Feb. 16 to 19, 1919. The author, R. W. H. Atcherson, is blast furnace superintendent, Inland Steel Co., Indiana Harbor, Ind.

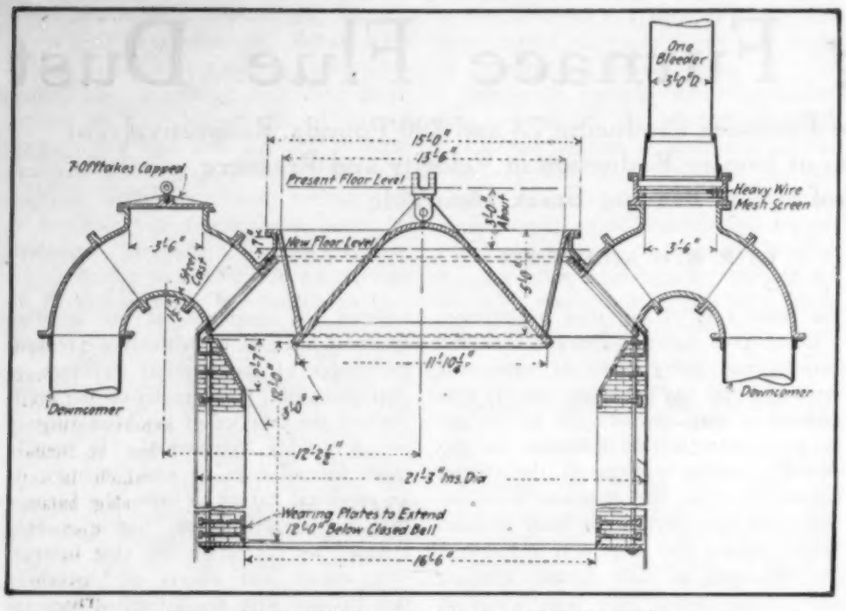

FIG. 1—BLAST FURNACE TOP SHOWING PROPOSED CHANGES

ore into a uniform material physically also brings about a much desired chemical equality.

We acknowledge the existence, from a practical operating standpoint, of an irreducible minimum of flue dust production for each grade of raw material with a given rate of furnace travel but, especially in the case of granular flue dust, we believe that much of the material now carried over by the gas might be retained by a furnace with ample gas areas in the furnace top and downcomers, as shown in Figs. 1 and 2.

From any viewpoint, coke is the very lifeblood on which the whole smelting process depends. The physical structure of the coke has a very much greater influence on every phase of blast furnace practice than has the structure of any of the other materials. As indicating the effect of soft coke on flue dust production, the comparative statement in Table III is given, covering two operating periods on the same furnace under apparently identical conditions aside from the coking time on the by-product ovens. While using the soft coke, so much of it was dissolved in the furnace stack that it was found advisable to decrease the volume and increase the temperature of the blast and to charge additional coke while it also was necessary to use several times the normal number of scouring charges of bessemer slag to keep the furnace working smoothly.

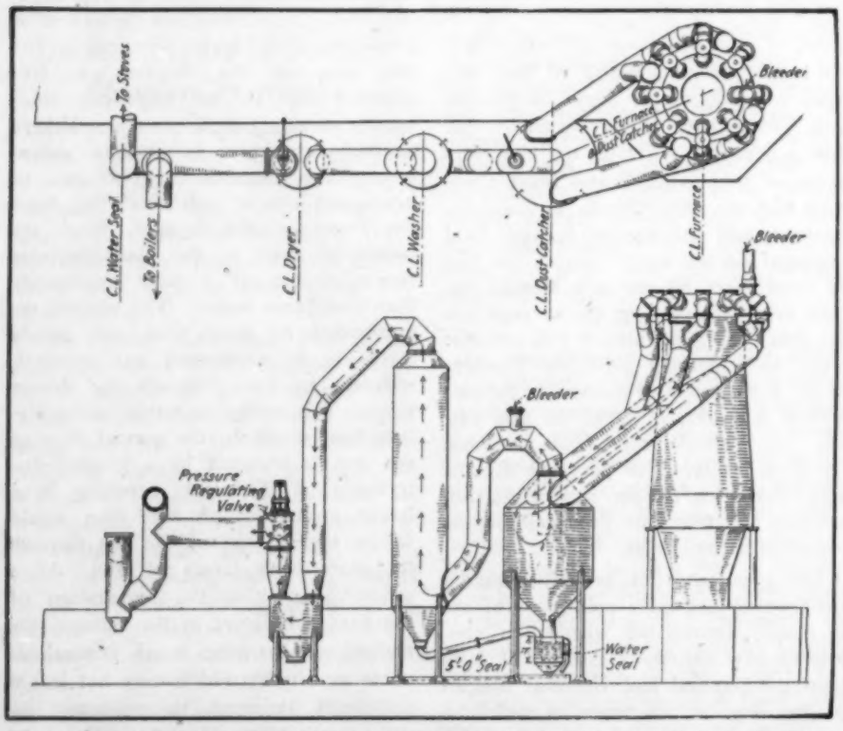

FIG. 2—DIAGRAM SHOWING ARRANGEMENT OF DUST CATCHER, WASHER AND DRYER AND PROPOSED REGULATING VALVE

The results shown for both periods are considerably below the average work of the blast furnace under consideration. About a month after the close of the second period, the coke was still further improved by a change in the coal mixture and the furnace also gained the advantage of a somewhat higher grade ore mixture. It is worth noting the improved results shown in the following statement, except the rate of flue dust production which increased as the furnace traveled faster in spite of the furnace working very smoothly. Not a pound of scrap of any description was consumed by the furnace during any of these three periods. In any consideration of this nature, it is highly important to exclude from comparison with normal blast furnace practice the performance of those furnaces that combine the smelting of iron ore and the cupola function of melting scrap.

Pounds flue dust produced per ton pig iron	196.9
Average daily tonnage of pig iron produced	601.9
Pounds material consumed per ton pig iron produced:	
Coke	1,876.0
Ore, scale, and sinter	4,291.0
Bessemer slag	21.0
Limestone	819.0
Cubic feet of air blown per minute at 60 degrees Fahr.	45,208.0
Cubic feet of air blown per pound of coke at 60 degrees Fahr.	56.5
Blast temperature, degrees Fahr.	1,186.0
Blast pressure, pounds per square inch	19.7
Gas temperature, degrees Fahr.	391.0
Gas pressure, inches of water	32.7
Average composition of pig iron:	
Silicon, per cent	1.05
Sulphur, per cent	0.032
Phosphorus, per cent	0.145
Manganese, per cent	1.04
Production over 1.25 per cent. silicon	7.10
Production over 0.05 per cent sulphur	none
Composition of slag:	
Silica, per cent	32.10
Alumina, per cent	18.75
Sulphur, per cent	1.18

Variable limestone causes irregular operations on a few furnaces but so much high-grade fluxing stone is available at a moderate price that this trouble is usually rectified.

The question of the most suitable lines for our present blast-furnace practice has been discussed so often that only general dimensions and results obtained on two furnaces built on about what is now generally conceded to be acceptable lines will be given. These data appear in Table II. The only contrast in operating results is in the remarkably small amount of flue dust produced by the Mark Mfg. Co. furnace. The superintendent, Arthur Baer, gives nearly all the credit to the uniform volume of air supplied by a turbo-blower. The reciprocating engines, for the Inland Steel Co. furnace shown, usually run about

116 revolutions per minute. The pulsations of the engine strokes can be entirely neglected after the long tortuous course of the hot blast main and bustle pipe. Most blast furnace men agree with Mr. Baer that his turbo-blower gives some advantage in compensating for atmospheric changes but the dominant effectives in his low dust production are raw materials, furnace lines, and operating methods. This contention is strengthened by the fact that numerous other turbo-blown furnaces show considerably higher losses.

The important consideration is not the type of blower but rather the variation in air delivery from one minute to another that causes irregular movement of the stock, with consequent high flue-dust production. This variation of reciprocating engines is especially noticeable at some of the plants where the blast furnace and rolling mill steam lines are connected. The steam pressure varies 25 or 30 pounds within a few minutes and no governor on reciprocating engines governs within two or three revolutions of a given point under varying steam pressure. We are unable to compare the ores used at these two plants, either by analysis or sieve tests, but it is interesting to note that no water is ever added to any of the materials charged into the Mark furnace and none of the flue dust is recharged.

Velocity of Exit Gas is Factor

Next in importance, after considering the raw materials and furnace equipment, would naturally be the velocity of the gas as it leaves the furnace; but this question has become rather involved because so few operators attempt to determine the velocity of gas in the downcomers and simply judge the dust-carrying capacity of the gas by the volume of air blown, the blast pressure, or the gas pressure at the furnace top. The causes and effects of high blast and gas pressures are very often misconstrued. A most recent blast furnace treatise now widely circulated states:

"It is very evident that to secure free and regular settling of the charge, one of the prime conditions is to have the blast pressure low in relation to the weight of the charge column. High blast pressure is an unmitigated evil and in general the lower the pressure with which a furnace will work, the more satisfactory its work will be."

The writer takes exception to that statement unless qualified by designating the conditions to which the high pressure is due. Large blast furnaces have been operated on very low blast pressures, where the advantages of carrying the slag decidedly acid were permitted to outweigh all other considerations. On the other hand, exceptionally good blast furnace performance is being made on 20 pounds blast pressure where 4 or 5 pounds of that pressure are due to back pressure from gas washers and gas mains and to a fairly viscuous slag and not due to scaffolding of the furnace or improper penetration.

The effect of the density of the gas on ore reduction in a blast furnace is of interest. The best operating results have been attained on furnaces with high gas pressures but there is a question whether the intensity of the gases is the direct cause of the difference noted in furnace performance or whether the increased back pressure of perhaps 1 pound per square inch above normal sufficiently increases the blast pressure to materially accelerate combustion of

Table II

Comparative Data on Blast Furnace Practice

Period Ending April 1, 1919	Mark Mfg. Co. No. 1, 3 months	Inland Steel Co. No. 3. 12 months
Total pig iron produced, tons	52,101	205,353
Average daily production of pig iron, tons	578.9	569.6
Average daily production of pig iron per 100 cubic feet essential furnace volume	2.59	2.86
Pounds coke consumed per ton iron produced	1,976	1,926
Pounds stone consumed per ton iron produced	901	918
Pounds bessemer slag consumed per ton iron produced	85	22
Pounds ore consumed per ton iron produced	4,823	4,656
Pounds scale consumed per ton iron produced	95	125
Pounds scrap consumed per ton iron produced	42	8
Pounds scrap produced per ton iron	41	134
Pounds flue dust produced per ton iron	73	290
Pounds sintered dust consumed per ton iron	none	72
Average cubic feet air blown per minute at 60° Fahr.	40,688	44,190
Average cubic feet air blown per pound coke at 60° Fahr.	49.9	56.0
Air blown per minute adjusted to 56 cu. ft. per lb. coke	45,660	44,190
Average blast temperature, degrees Fahr.	954	1,002
Average blast pressure, pounds per square inch	16.4	19.7
Number of tuyeres actually blown through	9	12
Size of tuyeres actually blown through	5 in. and 6 in. x 12 in.	5½ in. x 12 in.
Average gas temperature, degrees Fahr.	334	297
Average gas pressure in inches of water	42	35
Average per cent of water added to ore charged	none	0.9
Average composition of iron produced:		
Silicon, per cent	1.04	1.04
Sulphur, per cent	0.03	0.035
Phosphorus, per cent	0.19	0.297
Manganese, per cent	1.09	2.03
Average composition of slag produced:		
Silica, per cent	34.55	33.23
Alumina, per cent	14.75	15.92
CaO, per cent	46.16	44.80
MgO, per cent	1.98	1.95
Sulphur, per cent	1.54	1.42
FeO, per cent	0.46	0.71
MnO, per cent	0.91	1.97
Per cent of pig iron over 0.050 per cent sulphur	2.34	Not recorded
Per cent of pig iron over 1.25 per cent silicon	12.39	Not recorded
Per cent iron between 0.75 and 1.25 silicon and not over 0.04 sulphur	Not recorded	73.39
Method of charging:		
Dump large bell	Coke..... 9,200 Ore.....22,500 Stone 4,500	Ore.....14,000 Coke..... 3,700 Stone..... 5,000
Dump large bell		Ore.....14,000 Coke..... 7,400
Essential working volume:		
Height from tuyeres to 6 feet below bell	71 ft. 2 in.	69 ft. 0 in.
Height from tuyeres to top bosh plates	13 ft. 4 in.	12 ft. 8 in.
Height from top bosh plates to stack batter	5 ft. 9 in.	9 ft. 5 in.
Height of stack batter	44 ft. 0 in.	38 ft. 7 in.
Height from stack batter to 6 feet below bell	8 ft. 1 in.	8 ft. 4 in.
Diameter nose to nose of tuyere coolers	18 ft. 6 in.	17 ft. 3 in.
Diameter nose to nose of top bosh plates	23 ft. 3 in.	21 ft. 9 in.
Diameter of lining at bottom of stack batter	22 ft. 6 in.	21 ft. 4 in.
Diameter of lining at top of stack batter	17 ft. 0 in.	16 ft. 6 in.
Diameter of lining 6 feet below closed bell	17 ft. 0 in.	16 ft. 6 in.
Volume calculated from above dimensions	22,371	19,891
Bosh angle tuyere coolers to top bosh plates	79° 54′	79° 56′
Bosh angle of brick work	79° 55′	80° 43′
Stack batter in inches per foot	0.75	0.75
Angle of large bell	50°	50°
Diameter of large bell	13 ft. 0 in.	12 ft. 6 in.
Travel of large bell	2 ft. 0 in.	2 ft. 2 in
Stock line protection plates below bell	12 ft. 6 in.	9 ft. 4 in.*
Stock level below closed bell	4 ft. 0 in.	3 ft. 4 in.
Stock level below bottom of gas offtakes	4 ft. 8 in.	2 ft. 6 in.
Stock level to stack batter	10 ft. 0 in.	11 ft. 0 in.
Closed bell to downcomer openings in uptake	24 ft. 0 in.	24 ft. 0 in.
Total area of gas offtakes in square feet	38.5	38.5
Total area of downcomers in square feet	39.2	35.4
Total area of downcomer openings to dust catcher, in square feet	39.2	30.7
Total area of dust catchers in square feet	254.5	452.4
Total area of gas main exits from dust catchers in square feet	28.3	28.3
Brassert washer	15 ft. x 54 ft. 3½ in.	15 ft. x 54 ft. 3½ in.
Brassert dryer	12 ft. x 16 ft.	12 ft. x 24 ft.
Area of stove gas main in square feet	12.7	28.3
Area of boiler gas main in square feet	38.5	blanked
Area of bypass to stoves on No. 1 and No. 2 furnaces		9.6
Number of casts per 24 hours	5	6
Time lost per 24 hours stopping iron hole	25 min.	11 min.

*Stock line protection plates will be extended to 12 feet below bell.

Table III

Influence of Coke Hardness on Dust Production

Physical quality of coke	Soft and open	Appreciably stronger
Average coking time	18 hr. 51 min.	20 hr. 59 min.
Pounds flue dust produced per ton of pig iron	301.9	152.5
Average daily tonnage of pig iron produced	537.6	532.5
Pounds material consumed per ton pig iron produced:		
Coke	2,052.0	2,039.0
Ore, scale and sinter	4,585.0	4,533.0
Bessemer slag	113.0	39.0
Limestone	1,037.0	1,018.0
Cubic feet of air blown, at 60 degrees Fahr., per minute	43,949.0	44,214.0
Cubic feet of air blown, at 60 degrees Fahr., per pound of coke	57.0	58.2
Blast temperature, degrees Fahr.	1,245.0	1,120.0
Blast pressure, pounds per square inch	18.5	18.8
Gas temperature, degrees Fahr.	309.0	335.0
Gas pressure, inches of water	30.6	34.0
Average composition of pig iron:		
Silicon, per cent	0.98	0.83
Sulphur, per cent	0.032	0.031
Phosphorus, per cent	0.206	0.179
Manganese, per cent	2.09	2.32
Production over 1.25 per cent, silicon	0.00	0.00
Production over 0.05 per cent, sulphur	0.00	0.00
Composition of slag:		
Silica, per cent	33.43	33.50
Alumina, per cent	15.47	16.11
Sulphur, per cent	1.06	1.02

the coke. In this connection, it must be borne in mind that the capacity of gas for carrying flue dust varies as the square of its velocity so that a nominal reduction in the volume of blast blown into a furnace should, and usually does, cause a decidedly decreased flue dust production. That top pressures normally are a function of the volume and density of the gas leaving the furnace, the frictional resistance of the downcomers and gas mains and the area of the gas-burner openings and that the advantages gained by increasing the furnace area above the point where the charges of raw material strike the furnace wall, thereby decreasing the velocity of the gas and permitting the location of gas offtakes well above the stock level, must be recognized.

Having in mind the foregoing conclusions, we have designed an unusual arrangement of downcomers for reducing the exit velocity of the gas leaving the furnace, for equalizing the flow of gas over the entire furnace area, and for controlling the gas pressure inside the furnace. The system is designed so that the gas will travel practically the same distance from each furnace opening to the dust catcher and the swirling effect inside the dust catcher is on a balance as well.

The writer feels that there is no justification for the high gas risers on modern furnaces and suggests a trial of the construction shown in Fig. 2. Under this plan, it is proposed to control the gas pressure with a throttling valve on the gas outlet from the last unit of whatever gas-cleaning system is used. At first the regulating valves were placed as close to the mouth of the downcomers as practicable and the offtakes were carefully proportioned so that heavy material would be deflected against the concave surface of the throttling valves and absolutely stopped, causing at least some of it to fall back into the furnace, even against the flow of the gas, as shown in Fig. 3. However, objections to that location developed. It is primarily desired to promote the intensity of the gas without increasing its velocity until after it has deposited its dust in the primary dust catcher and gas washers. Also, it is the intention to have these valves set for the pressure it is desired to maintain in the furnace and yet have them afford relief from the rush of gas following furnace slips or rolls. Throttling valves in the gas offtakes might work so slowly as to endanger the furnace top whereas a valve remote from the furnace would utilize the receiver effect of downcomers, dust catcher, and gas washers, thereby dissipating the force of violent slips.

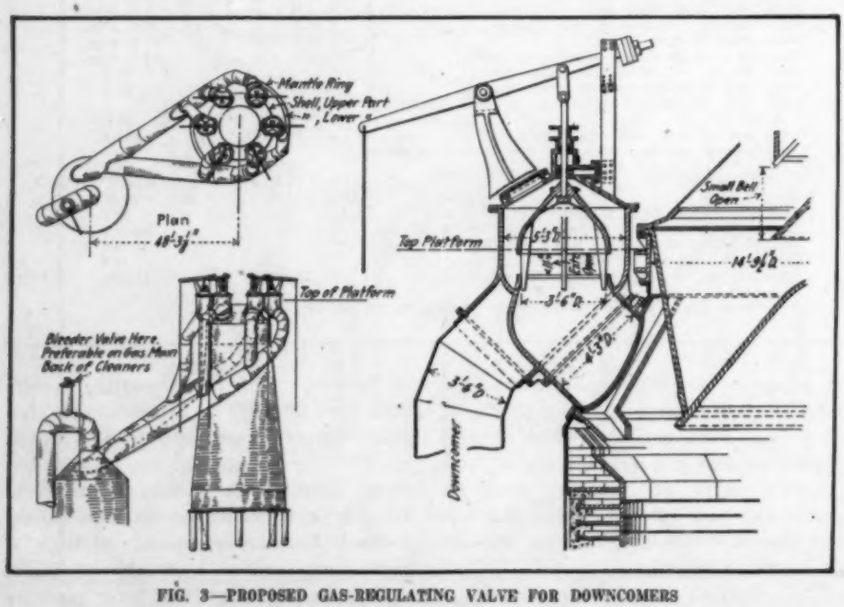

FIG. 3—PROPOSED GAS-REGULATING VALVE FOR DOWNCOMERS

Volumes have been written describing the various methods of removing flue dust from furnace gas. The writer believes steel-wool gas cleaners will be developed to practical usefulness but, in the absence of this development, favors the tower type of wet washers such as the Zschocke, Diehl, or Brassert. It is true these washers waste the sensible heat of the gas but they have proved to be wonderfully efficient and reliable gas cleaners. As a further development, the writer believes we shall discover a combination of flotation and hydraulic concentration of gas-washer sludge that will wash the coke dust out of the flue dust and furnish a material no more difficult to reduce in furnaces than is the finest ore. This may possibly be accomplished by some elaboration of the Dorr thickener. The dust thus concentrated could be pressed into briquettes for open-hearth furnaces or used to advantage in the manner suggested by Mr. Brassert for utilizing washer sludge by piping it to the skip pits where a measured amount is added to each skip or ore.

The loading, transporting, and unloading of hot flue dust has caused so many serious accidents, is such an expense, and makes it so nearly impossible to keep a furnace plant clean that even the material deposited in primary dust-catchers should be sluiced continuously from the catcher direct to the settling basin, as indicated in Fig. 2.

About 12 years ago, at the Bellaire furnaces of the Carnegie Steel Co., the dust catchers were converted into rough contact washers by filling the cone sections with water constantly discharging through a water seal constructed of standard pipe fittings. The object was to increase the gas-cleaning efficiency of the dust catchers but, at the same time, a more desirable method of

handling the dust was gained. By allowing the heavier dust to settle, enough of the coke dust was floated off as lighter material to permit the successful recharging of all flue dust recovered. This condition prevailed even when the 12-foot and 12-foot 6-inch hearth furnaces were driven to an average production of over 400 tons of iron per day, in spite of increased production of flue dust and a coincident consumption to as high as 400 pounds of flue dust per ton of iron produced. It seems that the elements of washing out the coke dust have generally prevailed wherever flue dust has been successfully recharged. Such an assertion also explains the superiority of weathered stockpile dust. J. W. Dougherty's proposed method of feeding raw dust through the furnace shell, by means of a worm gear, was given some publicity a few years ago, but it is so nearly a mechanical impossibility to introduce any material below the stock level of a furnace and yet distribute it uniformly over the full furnace area that his suggestion was never considered seriously.

It is well known that flue dust contains carbon sufficient to sinter it readily into an excellent material for adding to the ore burdens. Briquetting by using some binding material or sintering action, direct roasting, or sintering and nodulizing in rotary kilns are all in practical operation. While the product of these heat-agglomerating processes has a tendency to make the furnace charges more open, it also has a disadvantage in the important consideration of fuel economy. These products invariably are formed as silicates of iron and as such form the most irreducible material that is charged into the blast furnace. In general, we may say that no one but the actual operators can begin to appreciate the countless difficulties encountered in attempting to handle flue dust efficiently and economically for any of the foregoing processes. In the first place, if the dust is handled on a purely manual basis, the labor cost becomes prohibitive. Secondly, if elaborate and expensive machinery is installed to get away from the high labor cost, the wear and tear on the machinery prevents the success of the plan. But it may be safely said that the cost of any of these processes is far in excess of that for simply floating off the coke dust. The value of the hydraulic concentration method depends on the writer's hypothesis that the coke dust is really what causes the blast furnace operating difficulties when raw flue dust is recharged. There is much evidence that neither the extreme fineness nor the fact that it is highly magnetic would preclude returning the concentrated flue dust direct to the blast furnaces.

Debarring furnaces that consume more scrap than they produce, it is a very general impression that maximum blast furnace production can only be attained at a considerable sacrifice of fuel economy and excessive loss in the yield of the ores. The writer operated two furnaces which for a period of more than a year, consumed (untreated) all the flue dust recovered from their current operations. During that period, 80 per cent Mesaba ore was used. Both the pig iron production and the coke practice were highly creditable. In operating other furnace plants, the writer has been unable to satisfactorily utilize the flue dust except through sintering. Blast furnace operators hold such a diversity of opinions on all furnace problems that it seems rash to claim they are ever in accord, but I have never heard the claim advanced that all raw flue dust is equally objectionable material. The writer cannot conceive of any reason why wet flue dust fairly free from coke dust should disturb any of the functions of a blast furnace. He also believes the suggested reduction in velocity and the pressure control of the gas leaving the furnace would afford very decided advantages in operating the furnace.

Studies Expansion of Alloy Steels

BY JOHN A. MATHEWS

DURING the prosecution of the aircraft-production program in 1917 and 1918, the writer visited many plants engaged in the manufacture of motors, planes and parts, in carrying out his duties as chairman of the committee on aircraft-engine forgings. On several occasions, when the question of expansion was discussed, it was noted that there was confusion in the use of the term, "true coefficient of expansion," a physical constant, and "distortion in hardening." One engineer, referring to a steel shown in the accompanying table, stated that he could not consider it for crankshafts because of its excessive coefficient of expansion, while another steel, also listed in the table, was said to be especially good because it had no coefficient of expansion, since it came out of the oil bath perfectly straight. Many years ago a workman designed a new oil furnace and when asked what became of the products of combustion, he replied: "There ain't any, we burn them all up."

While the coefficient of expansion is not without its effect in volume changes in hardened steel, it is not a determining factor in the matter of distortion and going out of shape. Irregular heating, uneven furnace bottoms, and carelessness in withdrawing the part from the furnace, as well as the manner in which the part enters the quenching bath are of greater moment. Generally speaking, also, steels of relatively low hardening temperature will distort less than those requiring higher hardening heats. The coefficient of expansion must be considered in engineering design most frequently when different metals or alloys are used in the same construction. For example, the difference of expansion between a steel crankshaft and an aluminum crankcase might be of real importance and a steel with no coefficient of expansion would be much less desirable than one with the normal coefficient.

About 15 years ago, the writer made many determinations of the coefficient of expansion at low temperature ranges, usually between 20 and 100 degrees Cent. Among the materials tested were pure forged electrolytic iron, 11.73 parts per million for 1 degree Cent.; cast aluminum (99.93 per cent aluminum), 23.86; monel metal, 13.75; nickel steel (30 per cent nickel), 13.38; soft steel, 11.09; and commercial nickel, 12.42. These figures illustrate a general defect noticeable in much of the published data, namely, complete analyses and conditions of heat treatment are frequently lacking. For example, the following values are taken from tables of physical constants: Soft iron, 12.10; wrought iron, 11.40; steel, annealed, 10.95; steel, 13.22; nickel, 12.79; cast brass, 17.22; tempered steel, 12.40.

Most of these materials may represent a wide variety of analyses and a wide variety of physical conditions, and a comparison of various tables from different sources would lead one to suspect that there was likely to be some variation in the constants of nature. Few laboratories are equipped to make these tests and, at least until very re-

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cently, there has not been available any commercial form of dilatometer that could be used by the average laboratory worker. It would not be necessary for every laboratory to make these determinations if the full information were available in connection with the determinations that have already been made by many able investigators.

Through the co-operation and assistance of Major Heaslet and Capt. H. F. Wood, of the Detroit branch of the aircraft production department, the committee was assisted in securing various types of alloy steels used for crankshafts; and in connection with them we have the analyses and tensile properties, also the hardness and shock test values in several cases. The writer has supplemented this list with other types of alloy steels frequently used for axles, shafts, etc. All of this material has been tested in a heat-treated condition, which has produced elastic properties between 100,000 and 150,000 pounds per square inch yield point. The United States bureau of standards co-operated with the committee and made the actual tests of coefficient of expansion, which is a sufficient guarantee of the accuracy of the figures presented. We hope the complete data presented may prove of value to engineers and that future authors, in presenting data on the same subject, may follow the example set. The accompanying table shows the mark, analyses, tensile properties, hardness, Izod figures, and the coefficient of expansion for two ranges of heating; namely 25 to 100 degrees Cent., and 25 to 270 degrees Cent., the steels being arranged in the order of increasing coefficients for the wider range of heating.

Where exact heat treatment is not given, it is reasonably certain that the crankshafts were hardened from a temperature of about 1550 (840 degrees Cent.) and quenched in water until black, after which they were immediately put into the drawing furnace and the temper drawn to about 570 degrees Cent. In a few cases it is possible that the original quenching was done in oil rather than in water.

It will be noted that the maximum variation between the highest and the lowest coefficient of this widely differing group of steels is only 1.34 parts per million for 1 degree Cent. Practically considered, there would be considerable difference between these steels as to their actual behavior on quenching in regard to the distortion which would take place, but this small difference in coefficient of expansion can hardly be considered as the cause of these differences. On the other hand, a certain tool steel product introduced to the American trade many years ago is free from distortion in hardening and in volume change after hardening and tempering. It displays a normal expansion upon heating, not differing in any way from that of plain carbon tool steel. It shows a greatly increasing rate of dilatation upon heating up to Ac_1 but then undergoes the usual marked contraction until decalescence is complete, followed by a new dilatation at a greater rate than that below Ac_1, which agrees perfectly with Le Chatelier's observations upon the behavior of carbon steels. The fact that this product holds its shape more nearly than any other tool steel product and undergoes almost no volume change when properly hardened, peculiarly adapts it to a wide variety of uses in the tool room and shop. That it met pressing need is further shown by the fact that a steel of this type is now made by nearly every manufacturer of tool steel. As the writer was not connected with the original development of this product he may be pardoned if he expresses an opinion that its properties are of interest second only in importance to the invention of high-speed steel.

The low-carbon chromium-nickel steels undergo normal expansion on heating, yet in one instance fairly large and intricate gears for airplane use were made from this type of steel. They were so well handled, in the hardening

(*Concluded on page 569*)

Coefficients of Expansion for Eleven Typical Steels

Mark	Analysis									Tensile			
	Carbon	Silicon	Manganese	Phosphorus	Sulphur	Chromium	Vanadium	Nickel	Molybdenum	Elastic Limit, Lb. per Sq. In.	Ultimate Tensile Strength, Lb. per Sq. In.	Elongation, Per Cent., in 2 In.	Reduced Area, Per Cent
WG12085...	0.34	0.10	0.64	0.012	0.023	0.76		3.43		122,500	142,750	17.9	57.0
Ford.....	0.30	0.11	0.66	0.025	0.005	0.86		3.05	0.53	135,700	149,000	19.0	63.0
PF16990....	0.50	0.15	0.64	0.015	0.031	0.88		1.90		124,300	140,600	20.0	56.4
X.....	0.32	0.23	0.53	0.013	0.015	1.37		3.53		145,000	154,000	19.5	60.95
6555.....	0.35		0.65	0.008	0.045	0.80		3.14		125,500	135,250	18.5	56.2
15772.....	0.43		0.78	0.015	0.027	0.75		1.87		129,650	147,400	18.5	57.7
16404.....	0.43	0.18	0.81	0.031	0.032	0.88	0.07	2.55		140,000	155,500	17.5	50.63
257.....	0.40	0.14	0.76	0.006	0.012	1.20	0.17			157,500	175,500	16.0	50.9
1048.....	0.34	0.17	0.72	0.009	0.010	0.96	0.17			119,000	135,000	20.0	59.95
1156.....	0.44	2.07	0.81	0.012	0.010					117,500	148,000	22.5	49.55
1223.....	0.40	0.57	0.78	0.011	0.015	0.78				90,000	118,500	20.5	58.9

Mark	Hardness		Impact Test	Coefficient of Expansion, Parts per Million per 1° C.		Source and Treatment
	Brinell	Shore	Izod	Range 25° to 100° C. 77° to 212° F.	Range 25° to 270° C. 77° to 518° F.	
WG12085..	311	51	56	11.37	12.49	Liberty shaft from Lincoln.
Ford.....	302	43	51	11.67	12.57	Liberty shaft from Ford.
PF16990...	302	50	49	11.72	12.70	Liberty shaft from Packard.
X.....	325			11.83	12.78	Quenched 1525° F. (830° C.) oil; drawn 1050° F. (570° C.).
6555.....				11.73	12.79	Liberty shaft, source unknown.
15772.....	302			12.00	12.87	Liberty shaft, source unknown.
16404.....	323			11.60	12.89	Rolls-Royce shaft.
257.....	370			11.60	13.04	Quenched 1700° F. (930° C.) oil; drawn 1200° F. (650° C.).
1048.....	282			11.76	13.10	Quenched 1700° F. (930° C.) oil; drawn 1150° F. (620° C.).
1156.....	318			12.52	13.51	Quenched 1700° F. (930° C.) oil; drawn 1100° F. (590° C.).
1223.....	237			12.76	13.83	Quenched 1525° F. (930° C.) oil; drawn 1100° F. (590° C.).

Industrial Democracy a Sham?

Employe Representation Does Not Fulfill Spirit of True Democracy, It Is Contended

Dangers of Encouraging "Soviet Form of Control" Pointed Out by Works Superintendent

BY ROBERT E. NEWCOMB

LOYALTY and mutual understanding is the master key to harmonious human relations. The home and family life develop a degree of loyalty and mutual interest greater than in any other human relation; the intense loyalty of clansman and tribesman is not remarkable in view of their common understanding and interest. The lack of industrial strife in years gone by is clearly understood and is worthy of thought.

Years ago and to some extent today, especially in agricultural and in common pursuits, the organized industrial unit was the family group, which, as civilization and industry developed and enlarged acquired other members of society, and eventually evolved the present day factory or industrial household. As this evolution took place, the manifold duties of the household leader gradually removed him further and further from intimate personal contact with the members of his working family, with the natural loss of mutual understanding and confidence. The household members, that is the employes, feeling their neglect, and no longer having confidence in the head of the household, that is the proprietor or employer, experienced a feeling of class consciousness. The employe being unable to bargain fairly with the better organized proprietor realized his handicap and organized a protective trade union. The trade unions federated themselves until they became well able to cope with and cause disaster to any individual proprietor, with the natural consequence that the employers' protective association was formed.

The existing relationship between trade unions and employers' associations is similar to the age-old social differences between the cat and dog. The trade union has striven earnestly, but frequently erringly, to improve the condition of the employe. The employers' associations have principally organized to fight unreasonable demands of trade unions. Gradually the progressive employers' associations are endeavoring to re-establish the human household relationship between the employer and employe instead of awaiting a declaration of war and then giving battle. The trade union, with less progressive leadership, has looked questionably upon the re-establishment of the family relationship; neither has it placed a premium upon the development of trade skill, application of new machinery and rapid production. It is unamerican in the frequent closed shop demands made on employers to exclude nonunion men from employment, thus denying the freedom and right of every man to employment. Is this not a most vicious form of autocracy?

ROBERT E. NEWCOMB

These well known industrial social conditions have lead to proposals for profit sharing and industrial democracy. The proposal for industrial democracy usually takes the form of employes' representation in the management of industry. The organization of the employes' and management's representatives is frequently said to be patterned after our familiar form of city, state or federal government. This socalled industrial democracy is but a compromise with the bolshevik view of industrial management, leading eventually to soviet government of an industrial establishment. The employes' representation in industrial management is in no way parallel with any of our common forms of city, state, or federal government.

The stockholder, the consumer and the voting employe correspond to the voters of our federal government and if industrial democracy is to parallel our federal government, this trinity would elect their house of representatives and senate and president, corresponding to the co-operate board of directors and general manager respectively; a legislative branch establishing policies and an executive branch putting into action the estab-

lished policy. If employes' representation is advisable, in justice the consumer should also be represented, and both employe and consumer should have their representation on the board of directors rather than an executive department exercising a partial function of management as is usually the case. If employes' representatives are to participate in the functions of management, unlike in our federal government, foremen, supervisors and other executives are likely to exercise their functions so discreetly and with such timidity, that the efficiency of an organization will deteriorate.

The advertised differences between the employer and the employe are incorrectly stated as hours of labor and wages. The most serious difference is the lack of human, personal intimacy between the two, and hence lack of mutual expression, understanding and confidence. The employe now feels that he is only a small and almost ignored part of a large industrial wheel. In trade union shops the employe has considerable representation, but seldom as an individual feels himself to be a responsible part. In the shop which has introduced the soviet scheme of industrial management, will the individual employe, as an individual, feel himself to be of greater importance than at present, or will he have greater power of individual expression than now? Will the employe have greater respect for the elected representative than he will for his department foreman?

One of a dozen men shipwrecked upon an island will possess greater initiative, strength and judgment than the others, and by common consent the leader will dominate the others, detailing tasks for them for the good of all. It is a fact that foremen are usually promoted to foremanship because they are commonly acknowledged as leaders by their associates and the management. Under organized representation, the man usually promoted to foremanship would probably have the largest number of ballots in his favor, until after the scheme had been in operation a sufficient time to develop politicians.

Industrial Politics Possible

As the shop politician whipped his supporters into line, he would gradually acquire the greater support, and frequently the employes would find themselves time after time voting and supporting not the best representative, but the best politician. The shop politician and the employes' representative naturally will receive perquisites in the way of overtime and other small considerations from the foreman, so that the foreman will have as little friction as possible with the employes' representative. In addition, these little favors and perquisites will in some measure be handed down and passed along to the supporter of the successful representative. It is probable that quite a portion of the employes will become distrustful of their representative because of the consideration he receives, and thus become dissatisfied, possibly quitting their jobs or affiliating with a trade union, which are already hostile to the now popularly prescribed plans for employe representation. The trade union contending for representation against what may be called the "home rule representation" introduces another element of industrial strife. An example of this form of strife is the dispute of the steelworkers with the carpenters and millwrights of Bridgeport, Conn., handicapping the construction of building and installation of equipment for the rapid enlargement of the Bridgeport industries during the war.

The Other Side

SINCE various methods for employe representation were first devised in American industrial plants many executives and plant managers have viewed them with much skepticism. These managers while sincerely striving to solve problems of industrial unrest have questioned whether socalled systems of industrial democracy afforded genuine means for eliminating causes of strikes and ill feeling. The flaws and fallacies in certain proposals have been obvious, but they have been disregarded while the basic principles were given a fair trial. Now, however, it is claimed by some industrial executives who have made a careful study of the matter that the evils inherent in the systems more than outweigh the advantages to be derived from them. In the present article, Robert E. Newcomb, superintendent of the Deane works, Worthington Pump & Machinery Corp., Holyoke, Mass., analyzes the methods employed in industrial democracies and shows how plant politicians may eventually take the place of plant managers under the system, and how, in his estimation, the soviet form of industrial management is encouraged by it. Like other writers on the subject who have taken what might be called a "reactionary" position, he advocates the application of the principle of the golden rule in industry as the one sure method of obtaining industrial peace.

Permanent Success Doubtful

The permanent success of the soviet form of employes' representation in industry is doubtful; to many it appears destructive to the development of efficient industrial management. Present industrial relations on the whole have proved fairly satisfactory. The desirability of adopting this newborn baby should be delayed by most industrial concerns for several years until it has proved itself worthy of adoption. In the meantime, present industrial social relations may be improved upon by well known methods, to be referred to after the following brief summary of a few of the questionable features of soviet industrial management:

FIRST: Usually the employer proposes industrial representation, drafting the form of constitution and by-laws by which the representative shall be governed, thus at the start violating the principles of employe representations, and socalled industrial democracy.

SECOND: Employes' representation schemes are usually subject to cancellation or modification without the approval of the employe.

THIRD: The plans for representation do not provide the employe with a voice in the establishment of policies such as election to the board of directors would imply.

FOURTH: The plans usually offered provide only for participation in management, which is an executive function, thus, dividing authority and responsibility, hence destroying efficient production control.

FIFTH: No plans of the socalled schemes of industrial democracy give consideration to the consumer who is a very important member of industrial activity.

SIXTH: Soviet industrial representation is usually offered as an antidote to trade unionism, and as such is resented by the usual trade organizations, and hence frequently does not gain the confidence of the employe.

SEVENTH: With the introduction of schemes of employe representations there is also introduced the political question, which will eventually divide the shop or employes into competing groups, representatives of each endeavoring to acquire office for the personal advantage usually gained by the officeholder and his following. Industrial graft by shop politicians is a probability.

EIGHTH: The representative in power and his supporters are likely to receive special consideration such as good jobs,

overtime work and other favors not specified in the contract between the employer and the employe.

NINTH: Workers not politically inclined, but independent in thought, are likely to be the best producers and most loyal employes, but from the shop or department politicians they will receive scant consideration and probably will migrate to establishments where the employe is fully represented by a competent foreman, to whom he has the opportunity to express his feelings with the thought that he is talking directly to the management, which expresses through its foremen a personal interest in the employe.

TENTH: At soviet election times, candidates for representative may make promises as extravagant as the common politician, tending to disturb industrial harmony.

ELEVENTH: Soviet industrial government as exemplified by the now popularly prescribed employe representation or socalled industrial democracy, cannot safely be substituted for good scientific management, because the average representative has not the necessary economic training, and his zealousness may lead to economic disaster to the firm and its employes. Such cases have occurred where trade unions have obtained excessive power and abused it.

TWELFTH: Commonly, all plans of employe representation comprise so much red tape to check the abuse of power by foremen, employes' representatives and committees that the desirable kind of employe would quit rather than to follow up his grievance, and the undesirable employe is likely to make a lot of noise about nothing.

THIRTEENTH: Employes have no further or additional guarantee of obtaining just treatment for in all employe representation schemes so far brought forth the company reserves the right to lay a man off for shortage of work, or for some such reasons not hard to find when one desires to lay off an employe.

FOURTEENTH: The plans of employe representations are usually a subterfuge and without substance, and do not provide that the employe, as an individual, shall have greater personal contact with the employer than do present methods of management and social industrial relations.

Tells of England's Experience

In view of the foregoing it is interesting to note the recent expression of a prominent British labor leader, Miss MacArthur of the National Federation of Women Workers of England, and chairman of the advisory committee of the ministry of munitions, quoted in the *New York Times*, May 11, 1919.

"One method of democratic control of the factories, a method that has received much notice is that of the Whitley councils. They have been tried but have been found wanting, principally because they are not backed by the national unions. The representatives of the workers who are elected to meet the representatives of the employers are chosen for all sorts of reasons other than those which will give the employes a real voice in management. The workers cannot hold their own because they are pitted against men whose main business in life is to conserve the wealth of the owners, and the workers' repreesntatives are soon thought to be the pets of the employers and they soon lose the good will of their fellows. The result is that unrest follows and the prime object of the institution of the councils is defeated. Moreover, where the interest of a particular industry appears to be the thing that matters, the Whitley councils tend to become watertight organizations which disregard the welfare of labor as a whole.

"Another reason for objecting to the councils is that they do not take into account the interest of the public at large. They leave out the consumers, and it is for this reason that the industrial council, working in conjunction with an assembly, elected from the country at large, should make the laws of the nation."

It appears that a solution of our industrial social problems may be found by an examination of the history of industrial social evolution. This takes us back to the family group, which relations develop a bond of loyalty, mutual interest and confidence greater than in any other organized human relationship. A similar human relationship and corresponding loyalty is found on a larger scale in the clan or tribe and village. The unofficial leader of a village is usually the owner or proprietor of the principal industry of the village, and the village as a whole, and this leader's employes in particular are loyal to him, due to the human contact and common interests. Frequently the proprietor and his employes go to the same church, have the same doctor, meet on a level at the town meeting and in the lodge rooms, consult and advise one another on a variety of personal affairs; and although they may not both live on the same social scale, they do have a high degree of mutual understanding and confidence, approximating the correct formula for the much desired industrial contentment. Applying the household, tribe and village leaders' characteristics to the larger industrial world, it appears that our solution of the industrial problem may be built upon the following 14 points of industrial relations:

FIRST: The policy of directors and managers must be one of human interest in the welfare of the employe for the good it does to the man.

SECOND: Educate present foremen to the policy of the management by frequent individual conferences, as well as group conferences with the foremen. This is frequently neglected but of great importance, as the foreman is the key to the industrial situation and frequently unintentionally throws sand into the wheels of industrial harmony.

THIRD: Use greater care in the selection of executives, especially the foremen, taking only those of high moral character and of broad human interest and train them to share responsibilities with employe and management.

FOURTH: Train an employe thoroughly with respect to his trade and in an unselfish way, thus fitting him for promotion and inspiring him with an intent to rise above his existing condition, by his conscientious efforts and industry.

FIFTH: Scientifically organize and control the management of the establishment. Rule it with a firm, efficient, economic and just power, and human love.

SIXTH: Establish a wage system which will appeal to the individual and inspire him to his best efforts.

SEVENTH: Encourage executives and especially foremen to have a friendly interest in the personal affairs of the employes.

EIGHTH: Be prepared to advise an employe with reference to legal matters, medical attention, how and when to borrow money for building purposes, how and where to invest money in safe conservative investments.

NINTH: Where the corporation is large enough, legal and medical advice and investments and loans should be handled by experts. In other cases the employment officer and the superintendent should know what lawyers and doctors and banks to direct their employes to get the necessary advice, and should provide them with proper introduction.

TENTH: Help the employe to acquire a home by making such arrangements with the bank as will enable him to procure funds. The company can usually take out a second mortgage which the bank will carry with the company's endorsement at no expense and small risk to the company. The home owner acquires a proprietary interest in his property and naturally acquires the instinct of a property owner, frequently increasing the employe's personal thrift and his thrift in behalf of the company.

ELEVENTH: For those single men and others who do not wish to acquire a home, provide means for investing surplus funds, such as conveniences for making deposits in the savings bank at the rate of so much per week, a method corresponding to the deductions for the Liberty loan.

TWELFTH: Also provide some scheme whereby the employe can purchase stock in the corporation, weekly payments being taken from his wages.

THIRTEENTH: Encourage sick and accident insurance, and if possible provide old age pensions. These should be provided by state legislation, but may be advantageously handled through private companies until such legislation is passed. These advantages should not be provided entirely free of cost to the employe, but may be provided in part by the corporation for the purpose of encouraging the employe to look out for the future.

FOURTEENTH: Avoid anything and everything which has an indication of paternalism or charity. Executives should be democratic and take pains to recognize employes on the street and in all public places. Do not have or permit the executives to have too much official dignity; insist, however, that they maintain natural dignity.

Enforcing Terms of Contracts

Action for Specific Performance Requires That Agreements be Drawn so That There Can be no Uncertainty as Regards Purposes of Contracting Parties—How Suits for Damages Differ from Those for Specific Performances

BY CHESLA C. SHERLOCK

SPECIFIC performance of a contract is one of the remedies which may be had for a failure to carry out the terms by either of the parties. It is a remedy existing solely in a court of chancery or equity as distinguished from a court of law. The jurisdiction in a case of specific performance rests on the ground of the inadequacy and incompleteness of the remedy provided in a court of law.

Some explanation is perhaps here necessary. It is commonly understood that where a valid contract is entered into between two parties that it is binding upon them and must be carried out. But suppose that one of the parties refuses to carry out his share of the contract. What remedies has the other party?

First, he has a right to maintain an action for damages in the amount which his interests have been prejudiced by reason of the failure of the other party to carry out the terms of his contract. Perhaps, the contract was for the purchase of raw material, and the price having gone up the other party cannot buy more material without a great loss of money. He is entitled to recover this in an action at law.

Second, he is entitled to bring an action in a court of equity for specific performance of the contract, where the remedy at law is inadequate and incomplete. Suppose that mere money damage will not compensate him for the loss, that nothing will compensate him but the specific subject matter of the contract. Suppose that the subject matter of the contract was a certain factory site advantageously located near trackage and shipping facilities. Money cannot compensate the buyer for the failure or refusal of the seller to perform the contract and convey the site to him. He has a right to compel such action by getting a decree from a court of equity to that effect.

But there are certain elements and requisites which must be in every contract to make it the subject of specific performance. Not all contracts may be so enforced and it is well worth the attention of any business man to know just when this remedy can be invoked and when it can not. Specific performance has been defined as the actual accomplishment of a contract by a party bound to fulfill it, "for a decree for specific performance is nothing more or less than a means of compelling a party to do precisely what he ought to have done without being coerced by a court."

In order for the remedy to be available, it is necessary, in addition to the inadequacy of the remedy in an action at law, that there be a valid contract between the parties, for no court will enforce a contract that is not valid and binding between the parties, according to the forms and tests which courts commonly apply. There must be a legal subject matter, proper consideration, competent parties, such as are necessary in order to make all contracts legal and binding. These elements need not be discussed at length as every business man knows, or should know, what is necessary in order to make a contract good in the eyes of the courts.

Allows of No Uncertainty

Where specific performance is to be invoked there is one consideration or test which the courts apply that governs throughout the entire instrument, and that is the test of certainty. There can be no uncertainty about the contract if a decree for specific performance is to issue.

First, there must be certainty as to the subject matter. If the subject matter involves a factory site, there should be absolutely no doubt about it. It cannot apparently involve a factory site and raw material too, for if there is any doubt about what the contract is trying to do between the parties, the courts will refuse to decide the case and no decree will be issued.

Second, there must be certainty as to purpose. If the factory site is to be conveyed by A to B it must be clearly stated. If the contract appears to have no certainty of purpose and the court cannot determine by a fair reading of it what that purpose is, it will not attempt to read a purpose in or manufacture one for the parties, but it will simply drop the contract.

Third, there must be certainty as to the parties. Contracts are coming up in the courts every day in which it is impossible to distinguish between the parties and what each was to have or to do under the terms of the instrument. The controversy presents a hopeless puzzle unless there is certainty as to the parties and their respective rights and obligations. In this connection, the business man should remember that oral evidence is not admissible in court to vary the terms of a written instrument, and that the parties cannot tell by word of mouth what they were trying to tell in the written contract. The court will not listen to them, and that is why the contract must possess this quality of certainty if it is to survive an examination by the courts.

Fourth, there must be certainty as to consideration. The consideration is the very backbone of the contract, for without a valid consideration no contract is worth the paper it is written on. There must be a certainty of consideration so that the court can tell what it was without any trouble and pass on the question of whether it was valid or not and sufficient to make the contract binding between the parties. Unequal consideration, or poor consideration or illegal consideration will prove a good defense to anyone who does not wish to carry out his portion of the contract.

There must be certainty as to time of performance. If there seems to have been no anxiety on the part of the parties at the time the contract was executed in this particular, the court may conclude that the specific performance of the contract may not be so important after all, and find that an action of damages at law would provide an adequate remedy, for if there is no certainty as to the time of performance, surely there is no great need to have the contract performed at all. If the parties can wait until they are ready to perform, they might wait forever.

There must, in like fashion, be cer-

The author of this article, Chesla C. Sherlock, was formerly secretary of the Iowa industrial commission.

tainty as to the place of performance. And the reasons advanced for the time of performance will largely apply here. The degree of certainty required in a contract in order to make it the proper subject of a decree of specific performance has been said to be reasonable certainty having regard to the subject matter of the contract. It must be fair, reasonable and just to all parties concerned. And when contracts are executed, if these considerations are kept in mind it may sometimes save time, delay and embarassment.

Plans now are formulated to double the size of the Heltzel Steel Form Co. at its Warren, O., plant. Steel for its new building will be fabricated by the Ohio Structural Steel Co., Newton Falls, O. The building will be served by a 10-ton crane, contracts for which now are pending. When the new building is completed the company will add several new shapes to its line of products.

Making Steam Manifolds by Welding Process

According to the Air Reduction Co., 120 Broadway, New York, high-pressure steam manifolds are being manufactured by a Pennsylvania concern by the acetylene welding and cutting process. In welding one of these branches, a piece of 4-inch steel pipe 18 inches long is used. The centers for the sleeves are chalked off and the holes are cut by a cutting torch. As the next step the first socket is lined up and welded, followed by the others until the job is completed. Nipples are placed in the sockets as a protection to the threads during the welding process.

Following the welding of the sockets, disks of the proper thickness are cut and welded in each end of the manifold. These disks are chamfered so that when placed in position in the manifold the necessary bevel for a strong weld is secured. It is stated that the welding of a manifold complete requires about two hours. Approximately 80 cubic feet of oxygen and 70 cubic feet of acetylene are necessary for each job.

The method of procedure in constructing one of the manifolds is illustrated in the accompanying illustrations. Fig. 1 shows a semicomplete manifold with the position of the inlet socket indicated by a chalk circle. Cutting the hole for the inlet socket with the cutting torch is illustrated in Fig. 2. Fig. 3 shows the welding in of the inlet socket while Fig. 4 shows the finished manifold.

FIG. 1—SEMICOMPLETE MANIFOLD WITH A CIRCLE CHALKED FOR THE INLET SOCKET.
FIG. 2—USING TORCH TO CUT HOLE FOR THE SOCKET

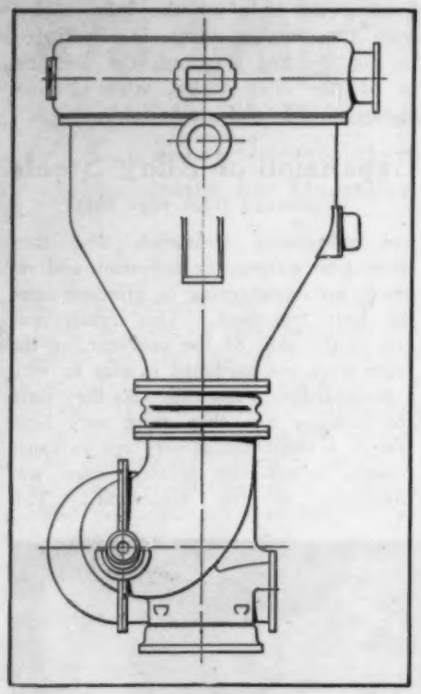
FIG. 3—INLET SOCKET PLACED IN POSITION AND WELDED BY THE OXYACETYLENE WELDER.
FIG. 4—ONE OF THE MANIFOLDS COMPLETED

Expansion of Alloy Steels

(Continued from page 564)

and subsequent treatment, that they showed no warpage or distortion and required no straightening or grinding after the heat treatment. This result was due to the skill of the operator, as the gears were not hardened in dies or with a gear-hardening machine. As they were for airplane use, they were very light and of a construction very apt to cause trouble unless the greatest care was exercised in the treatment. This again illustrates the fact that the coefficient of expansion, in itself, is not a primary cause of distortion in heat treatment; in general, hardening from a temperature just about that at which the maximum contraction takes place at decalescence would tend to improve the final results of hardening so far as distortion is concerned. This practice is now in use in some progressive plants where the end of decalescence is directly determined from pieces in the furnace rather than by relying upon the reading of the pyrometer located at a more or less remote spot in the furnace.

The plant of the Monterey Iron & Steel Co., Monterey, will be enlarged as soon as conditions in Mexico become more settled, it is announced.



SPLIT CASINGS AND EXPANSION JOINT ARE NEW FEATURES OF CONDENSER DESIGN

Modifies Design of Jet Steam Condenser

A modification in the design of vertical jet condensers manufactured by the Wheeler Condensor & Engineering Co., Carteret, N. J., is shown in the accompanying illustration. The casing of the tail pump is split vertically, permitting easy and quick removal for inspection of the pump rotor or other internal part. With the new design it is only necessary to remove the bolts and cover and uncouple the rotor.

Another change recently made in the design of the condensers is the expansion joint between the pump and the condenser body, which is designed to take care of changes in length due to temperature fluctuations. Since in some installations the joint is not recommended, the condensers are made with or without this feature, depending upon the conditions in the plants where they are to be used.

New Shaft Coupling Has Only Five Parts

A compression-type shaft coupling consisting of five parts has been developed by the Cincinnati Ball Crank Co., Cincinnati. As shown in the accompanying illustration the coupling is composed of three sections, the inner faces of which are machined to fit the shaft and designed so that bushing strips may be used for shafts of smaller sizes when desired. The outer surfaces of the segments are slightly tapered to accommodate the locking rings, which are of round section instead of the square section frequently used. On account of the design of this coupling it may be installed by a workman using only a hammer. The coupling is said to be especially desirable from the standpoint of safety inasmuch as there are no set screws or other projections to catch employes.

Builds Bending Roll for Large Plates

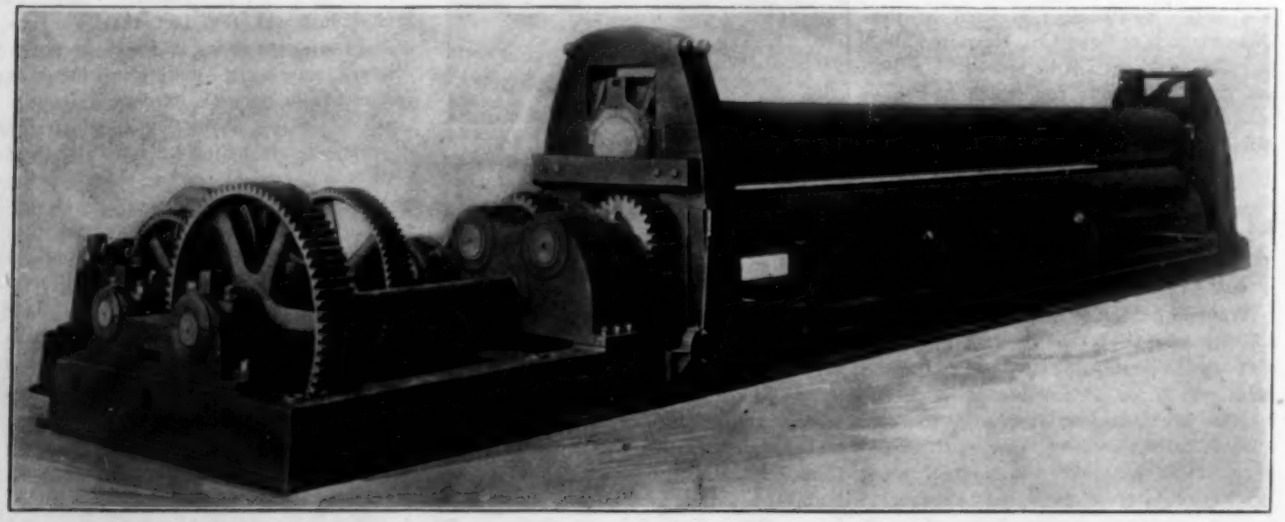
An unusually large plate bending roll has just been installed by the General American Tank Car Corp., at its plant at East Chicago, Ind. The machine was furnished by Joseph T. Ryerson & Son, Chicago, and was built by the Kling Bros. Engineering Works, Chicago. A feature of the machine is that it is provided throughout with steel gears with cut teeth, and all bearings are bronze bushed. The machine shown in the accompanying illustration is 34 feet 2 inches between housings and will bend ¾-inch mild steel plates. The top roll is 29 inches in diameter and weighs 40 tons. The bottom rolls are 21 inches in diameter and have two roller supports. The rolls are mounted on a rigid cast iron subbase and are provided with independent motors for the main drive and for power adjustment of the top roll.

COMPRESSION SHAFT COUPLING CONSISTING OF FIVE PARTS

Hold Sales Meeting

A conference of the sales department of the Hess Steel Corp., Baltimore, Md., was held recently. The representatives from the New York, Philadelphia, Buffalo, Detroit and Cleveland districts attended. At the conference plans were shaped for a sales competition among the various representatives covering the first quarter of 1920.

During the past year the sales department has done a large amount of work in getting the company's business switched from a war to a peace basis, and prospects for the future are especially bright, according to A. V. Farr, sales manager of the company.



BENDING ROLL WHOSE HOUSINGS ARE 34 FEET 2 INCHES APART—THE MACHINE CAN BEND ¾-INCH MILD STEEL PLATE

Lack of Cars

Curtails Refractories Output—Advance Not Generally Effective Until April 1

Pittsburgh, Feb. 17.—Shortage of cars continues to restrict the shipments of refractories and to keep down production at some plants. Manufacturers able to operate at more than 50 per cent of capacity are doing so because they have sufficient storage space to stock their outputs. With the storage space of some makers filled to capacity and only a limited number of cars available for shipments, it is necessary for them to curtail production. Some Pennsylvania makers lately have been using cattle cars for western shipments, but even this kind of rolling stock is not available for the western makers for eastern shipments.

New demands are not particularly heavy for either blast furnace or open-hearth brick, but all makers have their order books filled. While the recent advance in prices of fire clay and silica brick will become effective on both new and unshipped orders with some makers on March 1, manufacturers generally will not adopt this course with regard to unfilled orders until April 1. Business taken up to March 1, probably will carry present figures, but after that date, new orders will be on the basis of the higher prices. It is believed that some government business on the books of makers cannot be delivered before April 1, and it is doubtful if the price can be boosted.

First quality Kentucky brick is reported to have sold at $38 in the past week, although current quotations on this grade range from $40 to $45. Kentucky manufacturers report practically all the brick sold before the recent advance were at $36 and few orders now are being shipped as low as $33. Chicago advices are that Missouri makers have offered to take business well under open quotations.

Refractories

(Per 1000 f.o.b. works)

FIRE CLAY BRICK (First Quality)	
Pennsylvania	$38.00 to 45.00
Ohio	38.00 to 43.00
Kentucky	38.00 to 45.00
Illinois-Missouri	40.00 to 50.00
FIRE CLAY BRICK (Second Quality)	
Pennsylvania	$30.00 to 40.00
Ohio	22.00 to 30.00
Illinois-Missouri	35.00 to 40.00
SILICA BRICK	
Pennsylvania	$40.50 to 50.00
Chicago	45.50 to 55.00
Birmingham	46.50 to 51.50
MAGNESITE BRICK (Per Net Ton)	
9 x 4½ x 2½	$80.00 to 85.00
CHROME BRICK (Per Net Ton)	
9 x 4½ x 2½	$75.00 to 85.00
BAUXITE BRICK (Per Net Ton)	
55 per cent.	$40.00 to 45.00
76 per cent.	100.00 base

Buy Steel Plant

Americans Take Over Canadian Company—Makes $1,000,000 Extension

Toronton, Ont., Feb. 16.—The plant of the Northern Iron & Steel Co. at Collingwood, Ont., has been sold to American interests represented by M. J. Shaw, broker, of Toronto, and R. J. Courtney, of Buffalo. The price is stated to have been $200,000. The company, which was promoted by Col. J. A. Currie, was taken over during the war by William Kennedy & Sons, of Owen Sound, and devoted to manufacture of billets and munitions. It has been closed for some months. It recently was purchased by the Western Canada Steel Corp., of Calgary, which sold it to the American purchasers. Conferences have been held with the town officials of Collingwood looking to the resumption of operations.

The Dominion Foundries & Steel Co. of Hamilton, Ont., is making large extensions to its plant at a cost approximately of $1,000,000. The plate mill is expected to be ready for operation in about two months. The company has orders for steel plates on hand sufficient to keep the mill in operation for a year. Steel for automobile bodies is in much demand.

The Canadian General Electric Co. has received orders for equipment from the Ontario hydroelectric power commission, amounting to about $1,000,000, including two large 50,000-horsepower generators for the Chippawa power plant. It has also booked an order from the city of Winnipeg amounting to $500,000.

The Chase Tractors Corp., Ltd., is being organized with an authorized capital of $1,000,000 to take over the Canadian business of the Chase Motor Tractor Co. of Syracuse, N. Y. It has secured a large plant in Toronto where it will manufacture for the Canadian market and hopes to build up a large export trade. Robert J. Cluff, of Cluff Bros., is president, and T. P. Birchall and W. J. Cluff, vice presidents. Other prominent men interested are James Whelen, Senator N. Curry, R. N. Wolvin and J. W. Norcross.

Napthalene Up

And Other Coal By-Products Are Scarce with Advancing Tendency

New York, Feb. 16.—Prices on napthalene have advanced. Balls are now holding at 9½ to 10½ cents, and flakes at 7½ to 8½ cents, an advance of approximately 1 cent for the former, and ½ cent for the latter. Supplies of both are exceedingly scarce, and one large seller during the past week withdrew from the market for the remainder of the first half.

Excepting solvent naphtha, all other coal tar products are also scarce. Both pure and 90 per cent benzol are eagerly sought, particularly by the rubber interests, with the result that sellers are making little headway in catching up on back orders. The market on these materials, however, remains at last week's quotations of 27 cents to 31 cents per gallon, on pure benzol and 23 to 25 on 90 per cent.

Toluol is active and unchanged at 28 to 32 cents. Due to the demand for these products, the supply of motor fuel now being produced is not in keeping with the heavy output of last year at this time. While an improvement is expected in the buying of solvent naphtha, no perceptible increase in demand has set in, and the market on this product is sluggish. Prices are 22 to 27 cents.

Developments in the foreign exchange situation have not materially affected the export demand for sulphate of ammonia. Due, however, to the sold-up condition of most producers, and their tendency to supply domestic requirements first where possible, the movement of ammonia to foreign countries on new booking is relatively small, particularly first half.

Coke Oven By-Products

Spot	
Per Gallon at Producers' Plants	
Pure benzol	$0.27 to .31
Toluol	.28 to .33
Solvent naphtha	.22 to .27
Per Pound at Producers' Plants	
Phenol	nominal
Naphthalene, flake	0.07½ to .08½
Naphthalene, balls	0.09½ to 10½
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$4.00
Contract	
Pure benzol	$0.27 to .31
Toluol	.28 to .33
Solvent naphtha	.22 to .27
Per Pound at Producers' Plants	
Phenol	nominal
Naphthalene, flake	0.07 to .08
Naphthalene, balls	0.08½ to .09½
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	nominal

Planning More Mills at Duluth

Corporation's Program Includes Sheet and Tin Plate Plants as Well as Rod and Wire Mills — Expenditures May Run to $20,000,000 — Independent Mine Operators Must Meet 10 Per Cent Wage Advance Granted by Oliver Company

Special Correspondence of The Iron Trade Review

DULUTH, Minn., Feb. 14.—Optimism is the keynote in industrial circles in Duluth and surrounding territory. All the large interests are looking forward to interesting developments in the near future. It is reported that the plans for erection in Duluth by the United States Steel Corp. of a sheet mill and a tin plate plant will be announced officially in a short time. Predictions are made that the corporation's expenditures in Duluth will be nearer $20,000,000 than $9,000,000 as previously supposed. Both of the plants will be among the most modern of their kind, and will be of sufficient capacity to supply the requirements of this territory. It is intimated that 2000 men will be employed at the two plants and that nearly as many more men will eventually be on the payrolls of the wire and rod mills for which construction contracts have been awarded.

It is intimated that the decision of the Steel corporation to augment its manufacturing capacity at Duluth was in a measure, impelled by the possibility that the Pittsburgh basing system might be abrogated by the federal trade commission as a result of the action now before that body and that basing points for steel products may be established here and in the Chicago district.

The Oliver Iron Mining Co. as well as the independent iron mining companies are preparing to make heavy ore shipments during the coming season. The Oliver company is pushing forward development work and is stockpiling at its various mines in the Lake Superior district. Its full organization, of from 11,500 to 12,000 men, is being kept at work. The managements of the large independent compaies also are maintaining large forces at their principal mines.

The Shenango Furnace Co. is employing more than 600 men at the Shenango, Webb and Tioga mines. At the Webb mine stripping work has been done on a large scale, and the company will increase its output from that mine.

The Hanna Ore Mining Co. is preparing to strip the Wabigon property near Buhl on the Mesabi range. It is estimated that it will take three years to complete the work. Beginning about 1923 the mine may be an important shipper. The property is a lease from the Great Northern ore properties.

With the recent taking over of the Amasa-Porter mine on the Menominee range, Pickands, Mather & Co., will be operating 21 mines in the Lake Superior district. Fourteen of them are underground, six open pits, and one is both an underground and open pit mine. Ten of the mines are on the Mesabi range, four on the Gogebic, six on the Menominee and one on the Cuyuna. The company's annual production capacity is placed at 6,000,000 gross tons.

W. H. Locker, vice president of the Manganese Mfg. Co., has announced that the Cuyuna-Duluth mine on the Cuyuna range will reopen for development work next week. The shaft will be deepened for pocket room, and a station will be opened on the 340-level. It is expected that ore shipments from the mine will be greatly increased next season. It is also proposed to resume operations about March 1 on the Cuyuna-Mille Lacs mine, operated by the same company. It has been closed down since 1918.

Experts concede that a good profit will be obtained through the operation of the open pits, with ore prices $1 higher, but owners of some of the underground mines believe they will not be so fortunate in view of present high wages and other overhead costs.

Independent operators on the Minnesota ranges were much interested in the announcement by W. J. Olcott, president Oliver Iron Mining Co., that the 10 per cent advance in the wages of day laborers, employed by the United States Steel Corp. and its subsidiaries, applies to its mining division. Wages of other labor also will be readjusted, he asserted, so that a large proporton of the nearly 12,000 men on the Oliver payrolls in the Lake Superior district will be benefited. The advance necessarily must be met by all the independent companies operating in this territory. Not a single employe of any of the corporation's subsidiaries operating in this district went out when the steel strike was ordered last September. The Oliver company has been devoting considerable thought to plans for the housing of its miners. The announcement has just been made that plans for the erection of 110 houses at an estimated cost of $540,000, will be submitted to contractors for figures within the next ten days. The houses will be distributed as follows: Hibbing, 24; Coleraine, 32; Eveleth, 30, and Ely, 24.

An option has been taken by large interests on the La Rue iron ore property on the Vermillion range. It is said that the holders of the option propose to sink a four-compartment shaft to a depth of 500 feet, indicating their faith in the prospect of finding an ore body with a substantial tonnage. Experts estimate that more than 100,000 tons of ore is in sight at the property as a result of development work done by W. G. La Rue, of Duluth, and his associates.

A reorganization of the Section 30 Co., which operated a Vermillion range property from which considerable ore has been shipped, will be affected in about a month, according to George A. St. Clair, president of the company.

Meeting Is Called

Dates for the annual convention of the National Metal Trades association at the Hotel Astor, New York City, have been set for April 19 to 22. The meeting of the executive committee and the secretaries' dinner will be held Monday, April 19, the council meeting and gathering of local branch secretaries will take place Tuesday, with the alumni dinner in the evening. The main convention session and banquet will be Wednesday and a second convention session and meeting of the incoming administrative council Thursday.

The Steel & Tube Co. of America, Chicago, is reported stocking iron ore to capacity at its Anvil-Palms mine on the Gogebic range, Michigan.

Railroad Equipment Trust Ready

Financing Plan Involving Outlay of $370,000,000 Will Be Put in Effect by Government March 1—Lines May Continue Some of the Administration's Plans for Unification—Most of the Cars and Engines Already Returned

WASHINGTON, Feb. 17.—Work of perfecting the equipment trust plan for financing its purchases of 2000 locomotives and 100,000 freight cars, allocated to carriers of the country, is being completed by the railroad administration preparatory to its disbandment, except for a skeleton organization, on March 1. Each railroad will issue its individual trust certificates, to be taken by the administration, paying 6 per cent interest. They will involve $370,000,000, payable in 15 annual installments.

Making ready to resume control of their lines, railroads are bringing back their own equipment as far as possible, and it is stated that most of the cars and engines now have been returned. Car records are being kept for each line and all traffic is being given to and routed over the originating carriers wherever possible. Exception has been made in the case of dislocation of traffic as the result of the acute coal situation. Railroad systems which have been divided, part in one region of federal operation and part in another, are to be operated in the future as units, lines or systems.

Barring a strike, it is expected that by March 1 the operation of the carriers will be back to a comparatively simple basis, despite some attempts to frustrate final action on the conference report of the railroad bill. Certain carriers, however, doubt that they will ever recover traffic diverted by the government to other lines. Straightening out of the financial tangle of the carriers in connection with claims and accounts is one matter, it is declared, which may require years.

The railroads may continue some of the plans of unification which were put into effect under government control, although the carriers themselves appear to have a difference of opinion on this subject. It has been decided, however, to continue unified control of car distribution through a commission which will be established in Washington to co-operate with the interstate commerce commission.

The question of car supply, especially as it bears on delayed shipments of traffic of all kinds, such as iron and steel, coal, coke, lumber and grain, has been the subject of many protests made to the railroad administration and to members of congress. One of the difficulties necessarily has been the weather, but it is hoped that the railroads themselves will be able to work out a more satisfactory plan of distribution.

Aside from immediate causes of shortage of cars, it is recognized that another reason goes back to the limited buying of rolling stock by the railroad administration. Investigations of car shortages have been made repeatedly and have covered long periods, and the result of voluminous testimony on the subject is that the carriers will have to come into the market as soon as possible and replenish their supply. It is shown, for instance, that from 1907 to 1916, according to a report of the interstate commerce commission, there was not a shortage of cars. During those years there was a surplus of cars, except perhaps for a few months, once or twice, when there was a rush of business. As explained by Senator Kellogg in a speech in the senate last week, the years 1913, 1914 and 1915 were poor years in the railroad business in this country and the consequence was that there was a surplus of cars. Then came the tremendous increase of business which followed the entry of the United States into the war, resulting in a car shortage.

It was pointed out by Senator Kellogg that it requires about 100,000 new freight cars a year to keep the equipment up to standard, since that number of cars wear out each year. But for two years and two months the railroad administration has purchased only 100,000 cars, which compares with purchase of cars by the railroads for five years before the government took them over as follows:

	Added	Retired
1913	162,670	96,825
1914	150,813	96,985
1915	86,012	90,347
1916	88,254	109,996
1917	117,208	*62,250
Total	604,857	456,403
Average	120,991	91,284
Net addition yearly	29,700	.....

*Estimated.

This table shows the average purchase of cars by the railroads for the five years was, in round numbers, 120,000 a year; that the retirements were slightly under 100,000 a year, leaving a surplus or increase of substantially 30,000 cars a year to meet the increase in business. Those figures are for the five years before the war, said Senator Kellogg, and undoubtedly the increase in the number of cars was not great enough, but considering the condition of business, it was, perhaps, all that the railroads could be expected to purchase. Then came the big increase in business, expanding 50 per cent over 1915. The railroad administration for two years and two months bought only 100,000 cars and naturally the railroads themselves during this period were prohibited from buying cars. As a result there has been a decrease of something over 100,000 in the number of cars required.

"What cars have been in service have been overworked and have not been maintained as they should have been," said Senator Kellogg. "I am not blaming anybody for it; it is a condition which has occurred on account of the war. Of course, what the government should have done when it took over the roads was to have said to every railroad, 'Get all the cars you can have manufactured at once.' Instead of that, the railroad administration spent five months trying to standardize cars and locomotives and to start a general system of centralization and standardization. They lost five months. Material went up, shops got busy, and they never got the cars. That is the real fact of the matter.

"There is now a car shortage, and I am afraid there is going to be a greater shortage, because the railroads are going back into private ownership, not earning money enough now to pay their operating expenses and the interest on their bonds, lacking $60,000,000 a year. Of course, it will be difficult under any law to get the credit and the cars in time to save the commerce of the country."

Confusion as to what part of the Lever act is being enforced and by whom, which is a source of considerable annoyance to producers and consumers of coal and coke, has prompted Senator Frelinghuysen, New Jersey, to seek the facts. With this end in view he has introduced and had passed by the senate a resolution calling upon Director General Hines of the railroad administration to report to the senate the extent of authority with

respect to the shipment, distribution, apportionment or storage of coal or coke which were originally delegated to the fuel administrator under the Lever act and the orders issued under it, transferred on Nov. 22, 1919, to the director general of railroads. The resolution seeks to learn the powers now exercised by the director general and calls for the exact contents of all papers, documents, etc., conferring these powers on that official.

Corporation Asks to Use Panama Canal

WASHINGTON, Feb. 17.—Application for permission to operate the Isthmian Steamship lines and the New York & South American line through the Panama canal has been made to the interstate commerce commission by the United States Steel Corp., which owns the vessels, by the United States Steel Products Co., which operates them, and by a group of railroads owned by the corporation. It is stated that the railroads over which the traffic handled by the boats is hauled do not compete with the water lines.

The petition, filed by Richard V. Lindabury, Charles MacVeagh, and Charles S. Belsterling, attorneys for the Steel corporation and the other petitioners, declares the operation of the lines through the canal is not prohibited by the terms of the Panama canal act in their application to the operation of railroad-owned boats through the canal. The grounds on which the permission is sought are as follows:

"(a) The transportation of freights originating at or destined to points on the lines of railroad of federal controlled and nonfederal controlled lines" (owned by the Steel corporation) "is not, within the meaning of the Panama canal act, in competition with the transportation by the said Products company of freight by steamship through the Panama canal, for the reason that such origin and destination points are local to the lines of petitioners' railroads, and freight intended for delivery at the ports on the Pacific and Atlantic coasts must of necessity travel over petitioners' said lines of railroad, whether transported to the ultimate destination by all rail, by rail and water or by water and rail, as the case may be.

"(b) The transportation of freights by the Elgin, Joilet & Eastern, and the Duluth, Missabe & Northern, in through transcontinental traffic, commonly known as overhead service, is not such a competition either present or potential as is contemplated by the act for the reason, that

"(1) There is no competition in the initiation or making of transcontinental rates between the petitioning railroads and the water rates through the Panama canal on traffic transported by the Products company, as no one of the petitioning railroads has a voice in or is a party to the rate making power of the long line railroads which carry transcontinental traffic. The nonfederal and federal controlled lines receive merely an arbitrary portion or percentage of the rates of the railroads which transport the freight in long line carriage in transcontinental service. During the period of federal control all rates have been and now are initiated by the director general of railroads under authority conferred upon him by the President of the United States of America; and subsequent to said period all such rates for traffic handled in transcontinental service will be initiated or fixed by the long line carriers through the transcontinental freight committee. No one of the petitioning railroads has ever been, is now, or will be represented on said committee, or will have anything to do with the initiating or the making of rates on such traffic.

"(2) No one of the petitioning railroads has a voice in the recommendation and adjustment of shippers' claims for loss or damage to freight transported in transcontinental traffic, and therefore has no advantages in these respects in solicitation by opposing agencies."

The complaint insists that there will be no practical or possible competition between the petitioning railroads and transportation by water through the Panama canal, and also that if competition of any kind be possible, it will not be such "a probable or potential competition as is contemplated by the Panama canal act."

The corporation's railroads joining in the petition are: Elgin, Joilet & Eastern; Duluth, Missabe & Northern; Duluth & Iron Range; Bessemer & Lake Erie; Union; Birmingham Southern; Pittsburgh & Ohio Valley; Etna & Montrose; Saint Clair Terminal; Donora Southern; McKeesport Connecting; Johnstown & Stony Creek; Benwood & Wheeling Connecting; Mercer Valley; Youngstown & Northern; Newburgh & South Shore; Lake Terminal; Elwood, Anderson & Lapelle; and Pencoyd & Philadelphia.

Raise Tariff on Zinc and Tungsten Ores

Washington, Feb. 17.—While approving the house bill carrying tariff duties on magnesite, a subcommittee of the senate committee on finance has revised and increased duties on zinc ore and tungsten ore and ordered favorable reports on the bills embodying them. The subcommittee increased the duty on zinc ore to a flat rate of 2 cents a pound on the zinc content, striking out the house section which imposed graduated duties ranging from ¼ of 1 cent per pound on 10 to 20 per cent zinc to 1 cent per pound on 25 per cent zinc, and providing no duty on less than 10 per cent zinc. The subcommittee bill also incorporated a section amending the Underwood-Simmons act by which the duty on cobalt is increased from 10 to 25 cents a pound, the latter being the duty carried in the Payne-Aldrich act.

In the tungsten ore bill, the subcommittee inserted an amendment fixing a duty of $1.50 per pound on the tungsten content of high speed steel, and all alloy steels containing tungsten, the house bill having carried a duty of $1. This duty in the house bill was left unchanged as it applied to metallic tungsten, tungsten powder, ferrotungsten, lump and pulverized, ferrotungsten powder, commercial tungstic acid, calcium tungstate, sodium tungstate, and all other salts of tungsten and other manufactured materials containing tungsten, except high speed tungsten steel. The subcommittee also struck out the house section levying on all tungsten ore and concentrates imported prior to the passage of the act and held in the United States when such ore has been purchased at a price less than $17 per unit of tungsten oxide, a tax equal to the difference between the purchase price and the price ($17) named in the section.

The dyestuffs bill, reported favorably by the senate subcommittee last Saturday, revises the house bill considerably and eliminates the licensing feature. Instead it provides for an embargo on the admission of dyes to this country to be administered by the tariff commission. Section 504 provides that for three years after the approval of this act no dye or intermediate shall be admitted into the United States unless the tariff commission shall determine that such article or a satisfactory substitute therefore is not obtainable in the United States on reasonable terms.

The Woonsocket Wagon Mfg. Co., Woonsocket, R. I., has increased its capital stock from $10,000 to $350,000.

Obituaries

CAPT. DAVID KYLE, U. C., vice president and director of the Algoma Steel Corp., Sault Ste. Marie, Ont., died on Feb. 8 from pneumonia, following an attack of influenza. He was about 36 years of age and was born in Scotland, coming to the Sault in 1910 as engineer in charge of the construction of the merchant mill. Later he joined the staff of the steel plant and was placed in charge of maintenance. In 1912 he became general superintendent of operations. Captain Kyle went overseas with the Canadian forces in 1914 and saw active service, winning the military cross. In 1917 by special arrangement with the military authorities in England he returned to his duties with the steel company and two years ago was chosen vice president and a director.

John Calvin Merrill, who is reputed to have invented wire fencing at Dubuque, Iowa, 52 years ago, died Feb. 9 at Haywood, Cal.

Alfred C. Rex, retired iron and steel manufacturer, died suddenly of influenza recently at his home in Chestnut Hill, Philadelphia, aged 70.

G. A. Pedrick, purchasing agent of the Penn Seaboard Steel Corp., Franklin Bank building, Philadelphia, is recovering from a serious illness of pneumonia.

Josiah Kendall Proctor, founder and for many years president of the Philadelphia Textile Machinery Co., Philadelphia, died Feb. 11 at Ocean City, N. J.

William Edwin Davis of Davis & Davis, 95 Lafayette street, New York City, died Feb. 11 at his home in East Orange, N. J. He was 29 years of age.

Charles H. Smith, for the past 28 years superintendent of the Collins Co., Collinsville, Conn., maker of edge tools, died at his home in that town, Feb. 3, aged 64 years.

Chester E. Boulter, one of the owners of the Manchester Foundry Co., Manchester, N. H., died in a Boston hospital, Feb. 3, aged 37 years. He recently underwent an operation.

Charles Hoover, district sales manager at Scranton, Pa., for the Taylor-Wharton Iron & Steel Co., High Bridge, N. J., died at his home in Scranton. He also was district sales manager for the Tioga Iron & Steel Co., Philadelphia. Mr. Hoover formerly lived at High Bridge, N. J., and formerly was connected with the Vulcanite Portland Cement Co., Vulcanite, N. J.

Oliver L. Dosch, superintendent of the Singer Mfg. Co.'s plant at Elizabeth, N. J., died Jan. 31 in St. Elizabeth's hospital, that city, following a paralytic stroke. He was 45 years of age.

George W. Evans, 60, treasurer and one of the founders of the Erie Tool Works, Erie, Pa., died at his home in that city, Feb. 9, as a result of an injury sustained from a fall on an icy sidewalk.

William Van Schoonhoven Thorne, director of the Lackawanna Steel Co., railroad director and financier of New York, died at his home in that city on Feb. 6, after a brief illness with pneumonia. He was 55 years old.

M. T. Neylon, 70, superintendent of the drop forge department of the Pressed Steel Car Co., Pittsburgh, died at his home, 1120 Allegheny avenue, Pittsburgh, N. S., Feb. 8. He was a native of Ireland and had been connected with the Pressed Steel Car Co. for about 20 years.

John Booth Burrall, president and treasurer of the American Ring Co., Waterbury, Conn., and president of the Plume & Atwood Mfg. Co., Waterbury and Thomaston, Conn., maker of brass goods, died recently in Palm Beach, Fla. He was 41 years old and a graduate of Yale.

Patrick Henry Ferguson, manager of the New York office of the Pittsburgh Steel Products Co., died Feb. 11 at Richmond, Va., where he became ill of pneumonia, while on a business trip. Mr. Ferguson was 43 years of age and his home was in East Orange, N. J.

Thomas Prince, one of the owners of the Reed & Prince Mfg. Co., Worcester, Mass., maker of screws, bolts, nuts, etc., died in Los Vegas, Nev., Feb. 5, aged 78 years. He retired from active interest in the company about 15 years ago. With Edgar Reed, president of the company, he started the business about 40 years ago.

Lawrence J. Howard, '58, general foreman of the McConway & Torley Co., Pittsburgh, died at his home in that city, Feb. 12. He was a native of Madison, Ind.

James D. Simpson, mining manager in Cambria, Somerset, Clearfield and Westmoreland counties, Pennsylvania, for the Berwind-White Coal Mining Co., died at his home in Windbore, Pa., Feb. 11 of influenza-pneumonia. He was born in England, Jan. 29, 1878.

Lysander Wright, Newark, N. J., designer and builder of marine engines, died at his home in that city recently from a complication of diseases. He was born in East Boston, Mass., in 1851 and when a young man, entered the business of his father, who operated a marine engine manufacturing plant as Wright & Smith.

Joseph A. Brainerd, who had been in the iron and steel business in Boston for the past 38 years, the last 20 of which he had been a member of the firm of Harrington-Robinson & Co., died at his home in that city, Feb. 4, after an illness of two years, aged 55 years. Mr. Brainerd also for many years had been the eastern representative of Worth Bros. and the Central Iron & Steel Co.

Albert B. Curtis, who was one of the owners of the former Reed & Curtis Machine Screw Co., Worcester, Mass., now consolidated as the Reed & Curtis department of the R. B. Phillips Mfg. Co., died at his home in that city, Feb. 6, aged 65 years. For the past 15 years Mr. Curtis had been engaged in the oil extracting business in Worcester. He formerly was connected with the Worcester Lawn Mower Co., and had much to do in perfecting its products.

Louis J. Monahan died at his home in Oshkosh, Wis., on Feb. 3, aged 44. He was born in Oshkosh and in 1902 established the Termaat & Monahan gas engine and machine works in that city. In 1913 Messrs. Monahan and Termaat founded the Universal Motor Co. to build electric generating plants for army and farm use. Mr. Monahan was president and chief engineer of this company, and vice president of the Universal Foundry Co., Oshkosh, which was established later. Death was due to influenza and pneumonia. He was a member of the American Society of Mechanical Engineers and of the Society of Automotive Engineers.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE Baldwin Chain & Mfg. Co., Worcester, Mass., has acquired the Arcade Malleable Iron Co., which has been doing business in that city for 70 years. Alonzo G. Davis, president and general manager, who has conducted the business since the death of Paul B. Buckingham, son of George B. Buckingham, a former owner, about two years ago, retires with the change in ownership. The company has reorganized with the same officers as that of the Baldwin Chain & Mfg. Co., George T. Dewey being president and William H. Gates, treasurer. J. Denison Kenyon, for several years office manager, becomes general manager to succeed Mr. Davis. Whether the company will be continued under that name or operated as a department of the Baldwin Chain & Mfg. Co. has not been determined. The new owner has been a large customer of the company.

* * *

NEW rolling mills at Pittsburgh, Cal., of the Columbia Steel Co., 503 Market street, San Francisco, now are in operation. This will enable the company which also operates a steel foundry at Pittsburgh and one at Portland, Oreg., to commence shipments early in April.

* * *

TO ACCOMMODATE equipment it already has purchased, the Strong Steel Foundry Co., Buffalo, has contracted for the construction of a 100-foot extension to its main foundry building. The structural contract has been placed with the Lackawanna Bridge Co., Buffalo.

* * *

OWING to a large increase in business and tripling of its capacity, the Michigan Metal Products Co., Battle Creek, Mich., recently increased its capital from $10,000 to $20,000. The company will install automatic japanning ovens and other automatic equipment.

* * *

THE Kansas City Bolt & Nut Co., Kansas City, Mo., has contracted for a 4-stand 22-inch mill, hot billet shear and four sets of tilting tables. This equipment now is being built by the General Foundry Machine Co., Salt Lake City, Utah, of which Simon Rosenblatt is general manager.

* * *

APPROXIMATELY 2000 tons of scrap iron, consisting of rails, heavy melting steel and bundled skeleton, have been purchased by M. M. Levine for the Standard Iron & Steel Co., New Haven, Conn. This scrap is located at the plant of the Penn Seaboard Corp., New Haven, Conn.

* * *

FREYN, BRASSERT & CO., 645 Peoples Gas building, Chicago, have been retained as consulting engineers by Edmund W. Mudge & Co., Pittsburgh, in connection with the construction of a new 400-ton blast furnace at its Claire furnace plant, Sharpsville, Pa.

* * *

ERECTION of a plant to be devoted to the manufacture of fuel oil equipment of various types, now is under way for the Petroleum Heat & Power Co., Stamford, Conn. Francisco & Jacobus, 511 Fifth avenue, New York, are engineers in charge of construction and installation of equipment.

* * *

THE Hoyt Engine & Boiler Works, Winchester, Ky., which recently increased its capital stock, will make a number of improvements and extensions during 1920. It is planned to construct additional buildings and purchase the equipment necessary to make the plant one of the largest of its kind in Kentucky.

* * *

THE Titusville Forge Co., Titusville, Pa., manufacturer of all kinds of forgings, has established a New York office, its agent in that district being Atkinson and Utech, Inc., 111 Broadway, New York. John J. Utech, head of Atkinson & Utech, Inc., long has been identified with the iron and steel industry in various capacities.

* * *

INCORRECTLY reported as erecting several foundry buildings and installing two electric furnaces, the Cincinnati Steel Castings Co., Cincinnati, advises that it has purchased one 2-ton electric furnace and has taken over several acres of ground. It is building one addition 75 x 130 feet, to its foundry.

* * *

ADDITIONAL machine tool, machinery and tool equipment will be purchased by the Topp-Stewart Tractor Co., Clintonville, Wis., to increase its output from 105 machines in 1919 to 400 in 1920. This company now is marketing a new issue of $250,000 of 8 per cent preferred stock. Edward T. Boland is chief engineer.

* * *

THE National Acme Co., Montreal, manufacturer of milled screws, nuts, bolts and special parts, has erected a second story to its main plant, 50 x 420 feet. Purchase of new equipment will be confined largely to screw machines of its own manufacture. Orders for such other equipment as will be needed already have been placed.

* * *

THE Cutler Hammer Mfg. Co., Milwaukee, manufacturer of electrical devices, has leased a 5-story building at 317 North Michigan boulevard, Chicago, in which it will occupy two office floors and the basement and for the present will sublet the remainder. This brings the Cutler Hammer company much more closely in touch with the Chicago consumers.

* * *

MACHINE tools, enameling ovens, transmission equipment, and electric motors, will be purchased by the Automotive Parts Co., Indianapolis, manufacturer of cooling fans, etc. This equipment is required for its new plant scheduled for completion about March 15. L. G. Cummins is secretary and treasurer. Louis Schwitzer is president.

* * *

NEWLY incorporated at $10,000, the Providence Cutlery Co., Inc., 157 Federal street, Providence, R. I., will remove its plant as soon as a suitable location is found. It will then add new machinery to double its output. D. Paolantonio is president, Joseph F. Rioux is vice president and general manager and Raymond J. Rioux is secretary.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

FOR a reported consideration of $500,000, the Fisher Body Ohio Co., Cleveland, has acquired the fee to 40 acres at Coit road and East One Hundred and Fortieth street, East Cleveland, as the site for its new plant. This is said to be the highest price ever paid in Ohio for a factory site. The building to be erected on the site will be six stories high, 700 feet wide by 1300 feet long, and contains 1,500,000 square feet of floor space. The walls will be 25 feet from each street, the space in between being parked. It is stated it will be the largest single unit automobile body plant in the world. In addition to the main building, power plants, dry kilns and other accessory construction will be erected.

The parent company, the Fisher Body Co., Detroit, has just purchased the Saginaw Plate Glass Co., Saginaw, Mich., which will be combined with the Columbia Plate Glass Co., Blairsville, Pa., and the Federal Plate Glass Co., Ottawa, Ill., under the name of the National Plate Glass Co.

* * *

THE Westinghouse Electric & Mfg. Co. has started construction on four new buildings at its Essington works, Lester, Pa., on the Delaware river just below Philadelphia. Seven new buildings will be added to the group at a cost of $5,000,000. The improvements will provide work for 1000 additional men. About 200 company-owned houses are located close to the plant.

* * *

TO PERMIT its employes to purchase stock in it, the Reedsport Iron Works, Reedsport, Oreg., has incorporated for $25,000. Most of the stock is held by the company's founder, A. J. Drews, who now is president and superintendent. D. A. Smith is vice president and manager and Winnie Drews is secretary and treasurer. No additional equipment purchases are contemplated at present.

* * *

THE New Process Copper Castings Co. recently was incorporated under the laws of Delaware with a capital of $100,000, by John Mellor, president; James Smith, vice president and general manager, and John C. Bramer, secretary-treasurer. The company will engage in the manufacture of bronze and copper castings, specializing in castings for blast furnace equipments.

* * *

THE Memphis Steel Construction Co., Pittsburgh, recently was awarded the contract for the steel for a new building 100 x 1000 feet for the New England Westinghouse Co., Springfield, Mass., involving about 700 tons. The company also has taken an order for five oil storage tanks for the Beaver Refining Co., Washington, Pa., and for a 150,000-gallon tank for the Hudson Motor Car Co., Detroit.

* * *

THE General Rock Products Co., which operates limestone and dolomite quarries in York, Pa., and which plans to do a general business in foundry sands, burnt lime and foundry equipment, recently opened an office in room 628 Oliver building, Pittsburgh. Paul B. Reinhold, formerly in the sales department of the Crucible Steel Co. of America, Pittsburgh, is president of the company.

* * *

TO MANUFACTURE gray iron motor castings for automobiles, trucks and tractors, the Automotive Foundry Co., La Crosse, Wis., has been incorporated with a capital of $100,000. A new and modern building, 130 x 160 feet, is being erected and most of the needed equipment already has been ordered. O. B. Dibble is president; A. A. Rasmussen is vice president and J. N. Hurt is secretary and treasurer.

* * *

NEGOTIATIONS between the Peoples Gas Light & Coke Co., Chicago, and the Koppers Co., Pittsburgh, relative to the erection of a $15,000,000 coal gas plant, still are active. Samuel Insull, chairman of the gas company, returned recently from a visit in the east where the matter was under consideration. The plan is to build a plant next summer, with the Koppers Co. and eastern capital constructing and owning the plant, and the gas company operating at for a term of years, finally buying it at a set price. This plant would increase the gas capacity of the company 50 per cent.

* * *

THE Veteran Oil Gas Heaters, Ltd., with a capital of $500,000, has been incorporated to manufacture the oil-gas burners formerly produced by the Veteran Oil-Gas Co., 503 Queen street east, Toronto, Ont. W. Suddes was elected president and general manager and F. K. Watts, treasurer. Other members of the board are A. Suddes, S. J. Hill and J. Simpson. Messrs. Waddell and Laughlin also are interested.

* * *

TO ADD to its equipment for taking care of its increased business, Lewis & Milligan, Inc., 2108 Boulevard place, Indianapolis, manufacturer of automotive products, has incorporated at $35,000. Screw machines, grinding machines, furnaces, etc., will be purchased. Officers follow: President, C. A. Lewis; vice president, J. S. Milligan; secretary and treasurer, L. L. Paul. Present financing does not include the building of a new plant.

* * *

LOCATED at Indianapolis, the Whittington-Potts Mfg. Co. has incorporated at $50,000 and intends to locate plants in about five different states in 1920. At present it is manufacturing its own machinery used in the manufacture of wire fence, bale ties, cement posts, shingles, etc. G. W. Whittington is president, J. Frank Potts is secretary and treasurer, and A. W. Krames is sales manager. The company's office is located at 1707 Howard street.

* * *

UNDER a recent reorganization, the Empire Tube & Steel Corp., College Point, N. Y., took over the tube mill portion of the Empire Art Metal Co., Inc. The new company will specialize in high grade welded steel tubing. Several large contracts recently have been received from the automotive industry. William C. Lange is president and general manager; John Fraser is vice president and consulting engineer and Edwin S. Morgan is secretary and treasurer.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

WITH a sales force comprising 40 men, gathered from New England and the south and west, the C. S. Bigsby Co., has been organized as a manufacturers' agent in New England. It distributes electric washing machines, vacuum cleaners and other domestic electrical appliances. Headquarters have been established at 190-192 Boylston street, Boston, and distributing points have been inaugurated in all of the thickly populated centers of New England. C. S. Bigsby is president and J. S. Bigsby is secretary. Both formerly were identified with the Franz Premier Co., Cleveland, and J. S. Bigsby at one time was identified with the book department of The Penton Publishing Co. Joseph Seamans holds the balance of the stock in the Bigsby company without taking any active part in the conduct of its business. While the company now is New England distributor for the Frantz-Premier Co., and other manufacturers it will take on additional lines.

* * *

MOST of the equipment needed for its new boiler shop has been purchased but some orders remain to be placed by the Lookout Boiler & Mfg. Co., Chattanooga, Tenn. The plant will be of fireproof steel construction and operation within 60 days is contemplated. The company which is capitalized at $100,000 has elected officers as follows: President, H. H. Peek; vice president, John Stagmaier; treasurer, James M. Wester, and secretary, L. G. Hicks.

* * *

OFFICERS of the Gillian Mfg. Co., Canton, O., announced at the recent annual meeting of stockholders that the company had booked orders amounting to more than $3,000,000 in the roller bearing department last year, one of the most successful in the history of the business. A new addition to the grinding room which is now being completed will increase the space for grinding in the roller bearing division about 400 per cent. By an amendment to the company's code of regulations, stockholders increased the membership on the board of directors from five to seven and elected Attorney Clarence G. Herbruck and George Lee Miller to the board. B. T. Steiner, W. H. Steiner, P. K. Davis, M. S. Melbourne, and H. B. White are other members of the board. The directors elected the following officers: B. T. Steiner, president and treasurer; W. H. Steiner, vice president and assistant treasurer; P. K. Davis, vice president; and S. G. Zimmerman, secretary.

* * *

FOR the purpose of manufacturing its products on a more comprehensive scale the Cobb Electric Appliance Co., Lanesville terrace, Forest Hills, Boston, has been incorporated with a capital of $50,000. This company specializes on automatic electric heat and pressure control and devices embodying its use. While it does not intend to build a plant at present, it requires a planer, engine lathes, screw machines, stamping machine, milling machine and general machine shop equipment.

* * *

ANNOUNCEMENT has been made that the Industrial Coal & Coke Co.'s mine at Uniontown, O., has been sold to a Youngstown corporation represented by J. C. Lyons, of that city. The deal involves over $1,250,000 and includes some 2000 acres of coal land, having a 15-foot vein of Pittsburgh No. 1 coal. The property is located in Wheeling township, Belmont county, near Uniontown. The mine has been in operation about a year.

* * *

THE Detroit Steel Products Co., Detroit, is said to be the largest producer of steel window sash in the United States and upon completion of the new addition to its spring shop, will also be among the largest automobile spring manufacturing companies in the world. At the annual meeting of the company, held recently, the following were elected to the board of directors: John G. Rumney, Victor F. Dewey, Leo M. Butzel, Henry Russel, Mason P. Rumney, R. S. Drummond, H. F. Wardwell, A. L. Baldwin, and Edgar R. Ailes. Officers were re-elected as follows: John G. Rumney, president; Victor F. Dewey, vice president and general manager; Mason P. Rumney, assistant general manager; H. F. Wardwell, secretary; E. R. Ailes, treasurer, and A. L. Baldwin, production manager. It was reported that the company's output is sold well into the year and prospects for the largest business in its history are favorable for 1920.

* * *

THE Millers Falls Co., Millers Falls, Mass., maker of hardware, at its annual meeting, Jan. 30, elected these officers: President, Kingham Brewster; vice president, Philip Rogers; secretary and treasurer, George W. Nims; chairman of the board of directors, E. P. Stoughton. The company, which erected 14 houses for its employes last year, is planning to build more this year. Two general increases in wages were granted last year and the working hours changed from 54 to 50 hours a week.

* * *

ALL directors and officers were re-elected at the annual stockholders' meeting of the Warren Foundry & Machine Co., held Feb. 9, at Phillipsburg, N. J. The officers are: President and treasurer, William H. Hulick; vice president and assistant treasurer, A. D. Chidsey; and secretary, A. C. Riley. The directors, as re-elected, are W. H. Hulick, A. D. Chidsey, E. J. Fox, Chester Snyder, W. C. Hackett, Lee S. Clymer, and W. H. Walters. The annual report was one of the most favorable in the company's history.

* * *

PURCHASED by the Clayton & Lambert Mfg. Co., Detroit, a 10-acre site on the new outer boulevard and adjoining the outer belt line in Detroit, will be utilized for a new plant. These building operations will comprise two factory buildings, one 250 x 400 feet, and the other, 40 x 400 feet; one power building, 60 x 100 feet and an administration building, 60 x 130 feet. These buildings will be fireproof and the section used as a press room, which will be 50 x 400 feet, will be equipped with cranes. Railroad siding will extend the full length of the building and coal storage will be below the ground to permit of coal being dumped from cars directly into the bunkers.

Admit More Aliens, Says Barr

Immigrants Needed in the United States if Labor Market Is to Be Supplied and Cost of Commodities Reduced, Declares Head of National Founders' Association—Believes Question Should Be Made a Bigger National Issue

IMMIGRATION needs to become a bigger national issue; a more selective process needs to be enforced in admitting immigrants; the subject should have no political aspect at all and it needs to be dealt with without favor either to capital or labor."

William H. Barr, president, National Founders' association, is thus quoted in a bulletin issued by the Inter-Racial council of New York. Continuing, Mr. Barr states:

"Until that is done one of the very fundamental reasons for the difficulties of industry and the difficulties of the public who are paying skyrocketing prices, and largely because the labor supply is inadequate, will not have been removed.

"The solution of the problem, I believe, lies in an adequate supply of new labor, not a deluge of labor. We need immigrants who are best adapted to the needs of America who are most easily assimilated into our national life. There is no other source except immigration, from which to draw the necessary manpower to fill the gaps in demand for primary labor.

"There is little new labor being added to the supply. The help wanted columns are the best evidence of the fact. It is estimated that employers in the United States have spent more than $30,000,000 hiring help away from one another during the past year.

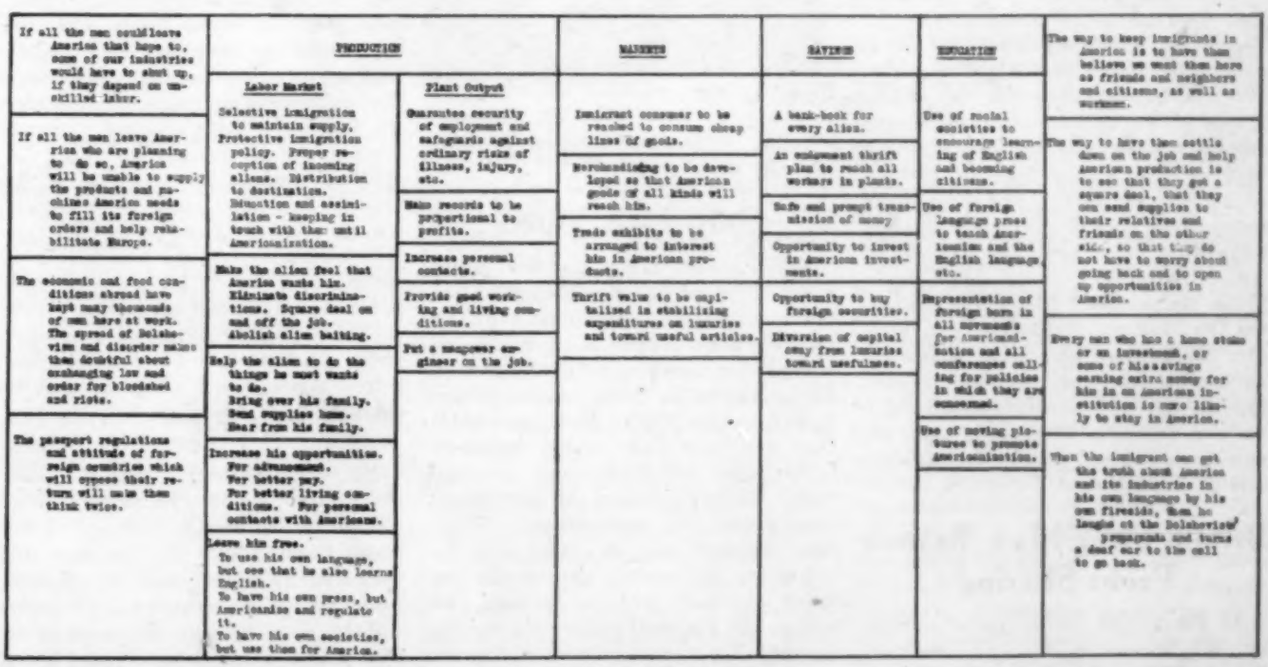
"In getting at the explanation of this labor shortage both the farmer and the manufacturer must consider the fact that during the war we were deprived of the supply of new labor we had been accustomed to getting from Europe. The farmer as well as the manufacturer gets part of his help from this new labor which comes here from the countries of Europe.

"The new labor that is coming in now is not nearly so great as the labor that is pouring out, pouring out of America into Canada and back to the countries of Europe. The immigration authorities at New York say that 1,125,000 foreign born workers and their families will leave as soon as conditions permit and they estimate the 1920 immigration at one-third of the normal prewar figures.

"As the situation exists today we are about 4,000,000 workers short due to the dwindling of immigration. There is not enough manpower to go around; wages have gone up; living costs have mounted apace and the situation of which the farmers complain, that their help and their children have been lured to the cities by higher wages, has resulted. Not only that, the migratory and seasonal labor, composed in a large measure of Finns, Italians, Poles, Portuguese, Syrians, Belgians and Bohemians, has practically been nonexistent for there has been a job and a half in industry, and at higher wages, for every man who wants a job.

"The American farmer today is buying metal products at an increase of 186 per cent; clothing, at an increase of 243 per cent; lumber, at an increase of 197 per cent. He has every reason in the world to complain. But so has the manufacturer for in each of these industries immigrant labor has represented from 50

"Stabilization of Industrial Unrest of Immigrant Manpower"


If all the men could leave America that hope to, some of our industries would have to shut up, if they depend on unskilled labor.
If all the men leave America who are planning to do so, America will be unable to supply the products and machines America needs to fill its foreign orders and help rehabilitate Europe.
The economic and food conditions abroad have kept many thousands of men here at work. The spread of Bolshevism and disorder makes them doubtful about exchanging law and order for bloodshed and riots.
The passport regulations and attitude of foreign countries which will oppose their return will make them think twice.
PRODUCTION
Labor Market
Selective immigration to maintain supply. Protective immigration policy. Proper reception of incoming aliens. Distribution to destination. Education and assimilation - keeping in touch with them until Americanization.
Make the alien feel that America wants him. Eliminate discriminations. Square deal on and off the job. Abolish alien baiting.
Help the alien to do the things he most wants to do.
Bring over his family.
Send supplies home.
Hear from his family.
Increase his opportunities.
For advancement.
For better pay.
For better living conditions.
For personal contacts with Americans.
Leave him free.
To use his own language, but see that he also learns English.
To have his own press, but Americanize and regulate it.
To have his own societies, but use them for America.
Plant Output
Guarantee security of employment and safeguards against ordinary risks of illness, injury, etc.
Make records to be proportional to profits.
Increase personal contacts.
Provide good working and living conditions.
Put a manpower engineer on the job.
MARKETS
Immigrant consumer to be reached to consume cheap lines of goods.
Merchandising to be developed so that American goods of all kinds will reach him.
Trade exhibits to be arranged to interest him in American products.
Thrift value to be capitalized in stabilizing expenditures on luxuries and toward useful articles.
SAVINGS
A bank-book for every alien.
An endowment thrift plan to reach all workers in plants.
Safe and prompt transmission of money
Opportunity to invest in American investments.
Opportunity to buy foreign securities.
Diversion of capital away from luxuries toward usefulness.
EDUCATION
Use of social societies to encourage learning of English and becoming citizens.
Use of foreign language press to teach Americanism and the English language, etc.
Representation of foreign born in all movements for Americanization and all conferences calling for policies in which they are concerned.
Use of moving pictures to promote Americanization.
The way to keep immigrants in America is to have them believe we want them here as friends and neighbors and citizens, as well as workmen.
The way to have them settle down on the job and help American production is to see that they get a square deal, that they can send supplies to their relatives and friends on the other side, so that they do not have to worry about going back and to open up opportunities in America.
Every man who has a home stake or an investment, or some of his savings earning extra money for him in an American institution is more likely to stay in America.
When the immigrant can get the truth about America and its industries in his own language by his own fireside, from behind the lines of the Bolsheviki propaganda and turns a deaf ear to the call to go back.

THE INTER-RACIAL COUNCIL, OF WHICH COLEMAN DU PONT IS CHAIRMAN OF THE BOARD, THUS SUMMARIZES ITS KNOWLEDGE OF ALIEN LABOR PROBLEMS. A STUDY OF THE CHART WILL SHOW JUST HOW THE VARIOUS PROBLEMS ARE RELATED AND HOW THEY MAY BE SOLVED

to 72 per cent of the entire unskilled labor force and this labor is more and more difficult to get.

"Production has fallen off, costs have mounted and the manufacturer has had to raise the price of his product in order to provide himself with a margin between what he pays for his raw materials and his labor and what he gets for his product."

More Steel Companies Raise Wages

More iron and steel companies have announced increases of 10 per cent in the wages of laborers, following the action of the United States Steel Corp., and several large independent interests. In the Youngstown district the advance will probably affect all classes of wage earners except members of the Amalgamated Association of Iron, Steel and Tin Workers in plants having contracts with the association. Youngstown reports state that the advance probably will be made the basis for a demand for a substantial increase in the tonnage rate of puddlers, heaters, rollers, roughers and other skilled and semiskilled workers when the scale for the ensuing year is considered at the annual conference between the organization and manufacturers about July 1.

The Cambria Steel Co., Johnstown, Pa., has posted notice of an increase in the wages of laborers to 44 cents an hour effective Feb. 1. Wages of other classes of labor will be adjusted in conformity with the raise in common labor, according to the announcement.

The Carpenter Steel Co., Reading, Pa., has posted notices signed by W. F. Kunhardt, president, and E. J. Poole, general superintendent, that effective Sunday, Feb. 15, day workers in the operating division, who now receive a basic rate of 42½ cents an hour or less, will receive an increase of 4 cents an hour. The base wage rates of all day workers now receive more than 42½ cents an hour, also will be adjusted.

The Empire Steel & Iron Co., Catasaqua, Pa., and the McKeesport Tin Plate Co., McKeesport, Pa., have announced an increase of 10 per cent in the wage of laborers. The latter company also has announced its intention to build 200 new houses which will be rented and sold to its employes.

British Firm May Extend Profit Sharing

At the annual dinner given recently by W. Somers & Co., of Heywood Forge, Halesowen, near Birmingham, Eng., to employes, S. S. Somers, the chairman referred to the profit sharing plan established last year. He said that it had been taken up heartily and a large number of workers are now shareholders. The directors have been working out a scheme by which the employes will receive a bonus. He said he believed they will be able to introduce a plan by which the workers will be given half the profits of the company after the shareholders received their dividends. This would represent an advance of 15 to 20 per cent over wages. The company paid over £200,000 in taxation on its profits during the war, and the chairman said the bonus plan depends solely on the new taxation which will be imposed for the payment of the war debt.

The *Labour Gazette*, the official organ of the British ministry of labor, states that changes in rates of wages which went into effect in December resulted in increases for 500,000 workers, aggregating nearly £140,000 per week. The general level of retail prices of food and other items, including rent, of the working classes, was approximately 125 per cent above the prewar level. Trade unions with a net membership of 1,500,630 reported 3.2 per cent of their numbers as unemployed at the end of December, as compared with 2.9 per cent a month earlier, the increase being due to unemployment in the engineering and shipbuilding trades, and 1.2 per cent at the end of December, 1918.

In the engineering and shipbuilding work there were 188 disputes affecting 304,000 workers, and the aggregate duration in working days of all disputes in progress was 9,592,000. This compares with 34,483,000 working days for disputes in all industries. The engineering and shipbuilding trades lost more time than any other group of industries. In coal mining there were 212 disputes affecting 906,000 miners and involving 7,441,000 working days.

Only Half Voted

The exact figures in the final ballot which resulted in the ending of the molders' strike in Great Britain showed 17,667 votes in favor of resumption of work and 11,263 opposed. The majority in favor of resumption was therefore 6404. It is significant that not over half of the members of the union voted, although the final ballot showed a total of 2500 more votes than its predecessor. Work was resumed Jan. 26. The men received no concessions they would not have obtained without striking, although in the final settlement it was agreed that a commission of inquiry should be appointed to investigate working conditions in the British foundry trade, and to make recommendations regarding local alterations in wages and other factors affecting the welfare of the foundry employes.

Contracts Awarded for 16-mill Sheet Plant

Plans of the Milwaukee Rolling Mill Co., Milwaukee, the organization and purposes of which were reported in THE IRON TRADE REVIEW of Feb. 12, call for a 16-mill sheet plant. It will be 386 x 425 feet, of brick and steel construction. The contract to design and construct the plant has been let to the Northwestern Bridge & Iron Co. of Milwaukee. About 1500 tons of steel will be required.

The Mesta Machine Co., Pittsburgh, Pa., has taken the contract to furnish the mills and auxiliary equipment. The Milwaukee Electric Crane & Mfg. Co., Milwaukee, will furnish and install the cranes, which include two 40-ton units with 10-ton auxiliary hoists and 90-foot span, and three 10-ton cranes with 70-foot span.

It is reported that arrangements are being made by which the new Milwaukee mill will be able to secure its supply of sheet bars locally. This arrangement, it is said, contemplates the conversion of the present plant of the General Steel Co. of Milwaukee, located at St. Francis, a suburb. This plant was established in 1917 and manufactured steel billets, most of the output going to the government. It contains three large electric furnaces; 24-inch blooming mill, which has never been used, and it is said that a sheet bar mill will be added. The plant closed down Oct. 1, 1919, shortly after the steel strike was declared. Officers of the company are men connected in executive capacities with the Milwaukee Electric Railway & Light Co., and its parent concern, the North American Co.

As reported in THE IRON TRADE REVIEW of Feb. 12, interests identified with the Milwaukee Corrugating Co. are closely affiliated with the new Milwaukee Rolling Mill Co. The new plant will be located near the corrugating works at Thirty-seventh avenue and Burnham street. Construction work will begin before March 1 and the plant is to be ready by June 1 or July 1.

An educational campaign has been inaugurated by the Employers' association of Pittsburgh, whereby information and advice on business and industrial problems will be disseminated by various speakers. The latter will be furnished by the association, who will address banquets and meetings of industrial organizations on request.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

WALTER B. EICHLEAY, of the John Eichleay Jr. Co., Pittsburgh, has been elected president of the Monongahela Iron & Steel Co., Pittsburgh, to succeed Robert Lock, who resigned recently from that position. Mr. Lock has become interested in a new company which is to erect a sheet mill at Ashtabula, O. J. H. Hillman Jr., and A. B. Sheets, have been elected vice presidents of the Monongahela Iron & Steel Co.; Thomas Watson is secretary and J. H. Creighton is treasurer and general manager.

William H. Doherty, formerly affiliated with the Reading Steel Castings Co., Reading, Pa., has joined the sales force of the Connecticut Electric Steel Co., Hartford, Conn.

Luther A. Davis has become affiliated with the Hydraulic Pressed Steel Co., Cleveland. He formerly was production superintendent of the Standard Screw Co., Corry, Pa.

Charles A. Bieder has been appointed assistant manager of sales in the railway sales department of the National Malleable Castings Co., Cleveland.

W. H. Lemont has assumed his duties as safety director of the plants of the Wheeling Steel & Iron Co., Wheeling, W. Va., with offices at Benwood, W. Va.

Thomas Brady has become factory manager of the Ivers-Lee Co., Newark, N. J., resigning as production manager for the Elevator Supplies Co. Inc., Hoboken, N. J.

H. B. Barnhart has resigned as open-hearth superintendent of the Brier Hill Steel Co., Youngstown, O., A. G. Egler being appointed his successor.

Roy E. Brakeman has assumed his duties as chief engineer of the Otis Steel Co., Cleveland. He formerly occupied a similar position with the American Steel & Wire Co., Fairfield, Ala.

William S. Boyd, formerly assistant purchasing agent of the Crucible Steel Co., and purchasing agent of the Page Steel & Wire Co., has been appointed purchasing agent of the Blaw-Knox Co., Pittsburgh, manufacturer of steel products. He succeeds J. Grier Campbell, who resigned recently to become assistant treasurer of the C. D. Pruden Co., Baltimore, manufacturer of standardized steel buildings for industrial plants, warehouses, cottages, garages, etc., which company recently passed to the control of the Blaw-Knox Co., through purchase.

Gilbert F. Close, for 18 months a confidential employe at the White House, and was secretary to President Wilson at the peace conference in Paris, has resigned from the executive office staff and accepted a position as assistant to the president of the Commonwealth Steel Co., St. Louis. Mr. Close left Washington Feb. 5 for St. Louis to take up his new duties. He comes originally from Scranton, Pa., and was associated with President Wilson during the latter's term as president of Princeton university. He went to Washington three years ago to become confidential secretary to Secretary of the Navy Josephus Daniels. In a short time he was promoted to be special assistant to the secretary of the navy, remaining there until August, 1918, when President Wilson drafted him for confidential work in the White House executive offices. Mr. Close was with the President during the entire negotiations in Paris and accompanied him on his trip to the Pacific coast last fall.

GILBERT F. CLOSE

Edward A. Lembeck, formerly attached to the Youngstown, O., sales offices of the Republic Iron & Steel Co. recently was transferred to the Pittsburgh sales offices of the company.

Lewis H. Miller has become mechanical engineer with the Cromwell Steel Co., Lorain, O. Until recently, he was affiliated with the Babcock & Wilcox Co., Barberton, O., as designing engineer.

Gustav A. Merkt has been appointed chief engineer for the Clinton-Wright Wire Co., Worcester, Mass. From 1917 he has discharged similar duties at the plant of the American Tube & Stamping Co., Bridgeport, Conn.

Edward L. Nixon, formerly manager of the Pittsburgh office of E. S. Jackman & Co., recently resigned that position to become Cleveland district manager for the Federal Tool & Alloy Steel Corp., New York., with offices at 1280 Ontario street, Cleveland.

Thomas J. Fitzgerald has become vice president and works manager of the Sturdi-Truck Mfg. Co., Holyoke, Mass. He formerly was chief engineer of the Midvale Steel & Ordnance Co.'s rifle plant, Eddystone, Pa.

Dr. Arthur R. Hitch recently resigned as chief chemist for the Ashland Iron & Mining Co., Ashland, Ky., to accept a position as research chemist with E. I. du Pont de Nemours & Co. Inc., at its Jackson laboratories, Wilmington, Del.

M. F. Gartland was elected first vice president of the Dayton Malleable Iron Co., Dayton, O., at its recent reorganization meeting, which re-elected J. C. Haswell president. Mr. Haswell closed his annual report with a tribute to the late Samuel W. Davies, who was connected with the company for more than 30 years, recently as vice president. Other officers elected at the meeting are: Vice president in charge of sales, H. D. Hunter; vice president in charge of operation, W. B. Runyan; secretary, W. H. Cassel; treasurer, Adolph Heinz.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

W. H. RAMAGE, formerly assistant chief engineer of the Brier Hill Steel Co., Youngstown, O., has been promoted to chief engineer, succeeding Harry Z. Bixler, who resigned recently to become identified with a new iron and steel enterprice. Mr. Bixler, who has been chief engineer of the Brier Hill company since its incorporation, formerly was chief engineer for its predecessor, the Youngstown Steel Co. He was presented with a gold watch by members of the engineering staff of the Brier Hill company and was tendered a dinner at the Hotel Ohio, Feb. 2, at which W. B. Ogden acted as toastmaster. E. J. Kauffman, formerly assistant chief chemist of the Brier Hill company, succeeds T. M. Phillips as superintendent of the company's washed metal plant. Mr. Phillips resigned Dec. 31 from that position which he filled during the joint regime of the Youngstown Steel and the Brier Hill Steel Cos. He is interested in the same project with Mr. Bixler.

L. W. Francis, president of Witherbee, Sherman & Co., is spending several weeks in Cuba.

J. Leonard Replogle, chairman of the Replogle Steel Co., is spending six weeks in the south.

Laird U. Park, of Park & Williams, Philadelphia, is spending a few weeks at Pinehurst, N. C.

W. S. Pilling, Pilling & Crane, Philadelphia, recently left for a trip to Honolulu.

Frank Samuel, who left for England just before Christmas, has returned to his office in Philadelphia.

C. H. Newcomb, junior partner of Crocker Bros., New York, and resident manager for that firm at Philadelphia, is recovering from a serious illness and is staying at Pinehurst, N. C., to recuperate.

Scott Stewart, general manager of W. J. Rainey, and vice president of the Rainey-Wood Coal Co., has been elected vice president and a director of the Matlack Coal & Iron Corp., 52 Vanderbilt avenue, New York.

W. H. Morris, formerly superintendent of the mining department of the Cambria Steel Co., Johnstown, Pa., recently was appointed general superintendent of the Peerless Coal Co. and the Mineral State Coal Co., properties of which are located at Buckhannon and Moundsville, W. Va., with main offices in Baltimore.

J. B. Warren, president of the Penn Seaboard Steel Corp, Philadelphia, and president of its recently acquired subsidiary, the Tacony Steel Co., Tacony, Philadelphia, is spending a brief period at Palm Beach, Fla.

Winslow L. Taylor was elected treasurer of the American Metallurgical Corp., Franklin Trust building, Philadelphia, at its annual meeting, held recently. F. J. Ryan was elected president, S. R. Vanderbeck, vice president, J. L. Hawley, assistant to Mr. Taylor and S. H. Ourbacker, secretary.

G. D. Cameron has been elected to the board of directors of the Youngstown Sheet & Tube Co., succeeding Amasa Stone Mather, deceased. Mr. Cameron will represent the Mather interests. A. E. Adams succeeds Hugh B. Wick whose other interests prevents him from attending the monthly meetings of the board.

C. E. Boyd, formerly connected with Timken-Detroit Axle Co., Canton, O., and recently foundry superintendent of the Saginaw Malleable Iron Co., Saginaw, Mich., has been made manager of New Marshall, Mich., plant of the Flint Foundry Co., which will be exclusively devoted to the production of automobile castings. The main plant and offices will continue at Flint, Mich.

G. B. Puly, president of the Puly Die Casting Co., 1706 East Thirty-eighth street, Cleveland, has resigned selling his interest to a group of men who will operate the plant under the name of the Standard Die Casting Co. C. F. Sperry is the new president; G. A. Campbell is general manager and W. A. Barnes is secretary and treasurer. The Standard company is affiliated with interests in Detroit and Toledo.

Alfred A. Corey, who resigned last April as superintendent of the Homestead works of the Carnegie Steel Co. to become president of the Cambria Steel Co., Johnstown, hereafter will make his headquarters at Philadelphia, according to an official announcement made recently. Hitherto the executive offices of the Cambria Steel Co. have been located at Johnstown. A. C. Dinkey, president of the Midvale Steel & Ordnance Co., the parent company of the Cambria Steel Co., who has previously made his headquarters at Philadelphia, will move to the New York office of the company.

William E. Wightman, assistant treasurer of the New Departure Mfg Co., Bristol, Conn., has been made treasurer to succeed Charles T. Treadway, resigned. Charles S. Joy, credit manager, has been promoted to assistant treasurer. G. R. Marsh, formerly of the Colt's Patent Fire Arms Mfg. Co., Hartford, Conn., has joined the New Departure forces as an assistant to Assistant Manager Hughes.

W. C. Stripe, formerly in the Pittsburgh office of the Combustion Engineering Corp., 11 Broadway, New York, has been transferred to the Philadelphia territory with headquarters in the Lincoln building, that city. Mr. Stripe, formerly was associated with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. C. L. Bachman recently returned from military service abroad and formerly manager of the Chicago office of the Combustion Engineering Corp., and E. F. Kuehnle, formerly employed in the company's main office in New York, now are affiliated with Mr. Stripe at Philadelphia.

E. M. Lewis, who for the past six years has been affiliated with the Hill & Griffith Co., Cincinnati, foundry supplies, first as sales manager and later as secretary and treasurer, resigned on Jan. 1, and now is connected with the E. J. Woodison Co., Detroit, in the capacity of general sales manager. Mr. Lewis was born and educated and received his early business training in Cincinnati. His first connection was with the Proctor & Gamble Co.'s shipping department. He remained with that company in various positions for about eight years. After several business changes he became associated with the Hill & Griffith Co.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

ALEXANDER TAYLOR, for many years manager of works of the Westinghouse Electric & Mfg. Co., at East Pittsburgh, Pa., has been made assistant to vice president in general charge of production, stocks and stores. R. L. Wilson has been promoted from general superintendent to works manager. E. R. Norris has been appointed director of works equipment in charge of machinery, tools and methods in the various plants. C. B. Auel is made manager of the employes' service department. G. M. Eaton has been made chief mechanical engineer of the company; C. W. Johnson and H. W. Cope, assistant directors of engineering; C. H. Champlain and E. S. McClelland, assistant works managers; John E. Bonham, assistant to works manager; E. S. Brandt, supervisor of equipment and methods. The following have been appointed managers of the engineering departments indicated: A. M. Dudley, automobile equipment; R. P. Jackson, material and process; F. E. Wynne, railway equipment department, and G. H. Garcelon, small motors.

Frank A. Turner, formerly chief engineer of the Becker Milling Machine Co., Hyde Park, Mass., has become chief engineer with the Flexible Automotive Tire Co., Boston.

E. G. Middleton, who for a number of years was connected with the National Acme Co., Cleveland, has been appointed advertising manager of the Colburn Machine Tool Co., Franklin, Pa.

Alexander Vallance has become assistant engineer in the ordnance engineering laboratory of the Holt Mfg. Co., Peoria, Ill. He formerly was affiliated with the American Machine & Mfg. Co., Atlanta, Ga.

F. S. Booker, formerly assistant superintendent of the American Wringer Co., Woonsocket, R. I., has resigned to accept a position with the Manhasset Co., that city, manufacturer of tire fabrics.

B. C. Saunders, who recently resigned as sales manager of the Wilmarth & Morman Co., Grand Rapids, Mich., and who purchased an interest in the Grand Rapids Grinding Machine Co. ,that city, has been elected secretary and sales manager of the latter company.

Fred H. Claussen has been elected president and general manager of the Van Brunt Mfg. Co., Horicon, Wis., agricultural implements, succeeding John Bodden, who retired Feb. 1 after a connection of 34 years. Mr. Clauson has been serving as vice president and general manager.

R. A. Neal has been appointed manager of the switch section of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., succeeding F. A. McDowell, now manager of the newly-created cost and development section. Mr. Neal came to the Westinghouse company shortly after his graduation from New Hampshire State college in 1910 and has served in the various capacities of order man, inquiry man and assistant manager of the switchboard section.

Harry G. Stoddard, formerly president of the Trenton Iron Co., Trenton, N. J., has been made president and general manager of the Wyman-Gordon Co., Worcester, Mass., which recently consolidated with the Ingalls-Shepard Forging Co., Harvey, Ill. F. A. Ingalls is vice president, in charge of the Illinois works, which now is known as the Ingalls-Shepard division of the Wyman-Gordon Co. The company manufactures crank shafts, axles, gears, steering knuckles, etc., and plans are under way for increasing production at both plants.

Carl A. Johnson, president of the Gisholt Machine Co., Madison, Wis., was re-elected president of the Wisconsin Manufacturers' association at the annual convention held in Milwaukee, recently. J. G. Rosebush, Appleton, was elected vice president; George F. Kull, Milwaukee, secretary; and F. J. Sensenbrenner, Neenah, treasurer. George B. Ingersoll, of the Fairbanks-Morse Co., Beloit, and Fred H. Clauson, of the Van Brunt Mfg. Co., Horicon, were re-elected directors. New directors are: Milton H. Pettit, J. I. Case Threshing Machine Co., Racine; W. D. James, president of the James Mfg. Co., Fort Atkinson, and George Vits, president of the Aluminum Goods Mfg. Co., Manitowoc.

W. J. Garrod resigned recently as superintendent of the John Deere Harvester Works of Deere & Co., East Moline, Ill., to assume responsible duties in connection with the H. F. Wilcox Oil & Gas Co., Tulsa, Okla., of which he is a director and in which he is financially interested. He will take a rest before removing to Tulsa. For the past seven years, Mr. Garrod has been associated with the Deere Harvester plant, the last year and one-half as purchasing agent and superintendent. Prior to 1912, he had been affiliated with the International Harvester Co., McCormick Harvesting Machine Co., and Deering Harvester Co., for about 15 years.

F. L. Collins has become affiliated with Freyn, Brassert & Co., 645 Peoples Gas building, Chicago, as power and electrical engineer. Mr. Collins formerly was connected with the Illinois Steel Co., at its South and Gary works and with the Universal Portland Cement Co., at Buffington, as electrical engineer. He later joined the Dominion Iron & Steel Co., Ltd., Sydney, N. S., as chief electrical engineer. Subsequently he was connected with the ordnance department of the United States Steel Corp., at Neville island, near Pittsburgh and lately was chief electrical engineer of the Pittsburgh Crucible Steel Co., Pittsburgh.

C. N. Kell has been appointed assistant to the general manager of the forge department of the Duff Mfg. Co., Pittsburgh. For the past eight months he has been assistant to the general superintendent of the Duff company, in charge of efficiency work. Mr. Kell designed the equipment of the Rock Island arsenal for testing the recoil mechanism of the French 75-millimeter gun. Later he was civilian in charge of testing the functioning of these recuperators. His previous experience included work as mechanical engineer with the Mandel Corp., Chicago, and assistant superintendent of the Denny Tractor Co., Cedar Rapids, Ia. Mr. Kell was graduated in 1912 from the mechanical engineering department of the University of Illinois.

Solving Income Tax Problems

Some Confusing Features of the Law as Related to Individuals and Corporations Explained —Early Preparation of Returns Advisable to Avoid Errors—Roper Urges Penalty to Compel the Keeping of Clear Records of Income

INCOME TAX DEPARTMENT
Conducted by
WOLFF, MILLER & CO.
Certified Public Accountants
1326 Broadway, New York City

THIS article deals with some of the more important features of the income tax law as they affect individuals, partnerships and corporations not covered in previous installments. In view of the announcement by Internal Revenue Commissioner Roper that no tentative returns will be accepted and that final income tax returns must be filed by March 15, it would be advisable for all taxpayers to begin preparing such returns now so as to avoid errors due to haste. Corporations especially should devote sufficient time to the preparation of the income tax returns, on account of the complexities involved in the calculation of excess profits. Corporations which had an income from government contracts must file a special report covering such income.

The net income of a taxpayer will in most cases not agree with the taxable net income. The difference is due to unallowable deductions, such as gifts, and exempted income in the nature of interest from first Liberty bonds, 3½ per cent, etc. In order to be sure that no error has been made in the amount of the taxable income, a reconciliation of net profits with taxable net income should be made, as in the following example, referring to the case of an individual. The form for partnerships and corporations provide for such reconciliation, but, unfortunately, no such provision is made for individuals who are engaged in business. This reconciliation is valuable in that it proves that the taxable net income has neither been overstated nor understated.

Reconciliation of net profit as per books with taxable net income for year ended Dec. 31, 1919:

Net profit as per books		$50,000
Deduct: Exempt income:		
Interest on Liberty bonds	$500	
Interest on state bonds	500	1,000
		$49,000
Add: Unallowable deductions:		
Charity payments (in excess of 15 per cent)	$1,000	
Reserve for bad debts	2,000	3,000
Taxable net income		$52,000

In the form recently issued by the New York state income tax department, the taxpayer is requested to show the reconciliation of amount of income subject to state taxes with the amount of income subject to federal taxation. It would be a wise precaution for the taxpayer to have his accountant prepare such a reconciliation in every case.

Another important point forgotten is that if an individual engaged in business incorporates during the year, there must be two distinct returns filed, one for the individual and one for the corporation. The individual after taking inventory should have his books closed and his financial condition determined at date of incorporation. His income will be determined by adding to the income derived from the business, income earned during the balance of the year. The writers have had cases where the individual has continued in business without closing his books, with the result that an expensive examination was necessary at the end of the year to determine his status upon the transfer of his business to the corporation. Recently, the ownership of a corporation changed hands and immediately after that the corporation received an additional assessment of about $500 covering the taxes of a year prior to such change of ownership. In purchasing stock of a close corporation, the question of the possibility of such additional assessments due to incorrect return is something that should be given close scrutiny.

The amount of profit resulting from the sale of personal property is the excess of the selling price over cost if purchased subsequent to March 1, 1913, or the fair market value on March 1, 1913, if acquired prior to that date. In the case where property has been acquired prior to March 1, 1913, the profit resulting from a sale of such property as shown by the books would be the excess of selling price over cost, whereas the taxable profit is the difference between the selling price and market value as of March 1, 1913.

Under 1919 regulations no change can be made in the accounting period of any taxpayer from a calendar year basis to a fiscal year basis and *vice versa* without proper notice being given to the commissioner of internal revenue and his approval thereof. Furthermore, the method of valuating inventories as adopted in 1918 must be adhered to. That is, either "at cost," or at market, or cost which is lower. The taxpayer is required to keep his inventory on file and should be in a position to support prices adopted with proper records.

In the case of a corporation, the matter of calculating invested capital for excess profits tax purposes is something that the ordinary business man should not attempt to do, as it is entirely too difficult and technical for a layman. Before declaring any dividends at any time, the board of directors of a corporation should consult its attorneys or accountants for the purpose of determining the effect of any of the payments of such dividends upon its invested capital for the taxable year. The

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THE IRON TRADE REVIEW *has received the following letter from Charles D. Wood, T. B. Wood's Sons Co., manufacturing engineers, Chambersburg, Pa.:*

For determining the amount of tax in the problem on page 178, column three, of your Jan. 8 issue, try the following formula:

.46 of net income, minus .0504 invested capital, minus, $740.

This formula should work in any case where the net gain is equal to or greater than 20 per cent of the invested capital.

For problems where net gain is 20 per cent or less of the invested capital, try this formula:

.28 of net income, minus .0144, invested capital, minus $740.

In the example referred to the profits for 1919, or "net income" before tax deductions, was given as $100,000, and the invested capital $250,000. Mr. Wood's formula gives the correct amount of total tax, $32,660. Reference to the example and the formula should prove helpful in checking up on similar problems.

The accompanying article is the third in the present series on income tax problems prepared for THE IRON TRADE REVIEW *by Wolff, Miller & Co., New York.*

law now considers dividends paid within 60 days after close of fiscal year of a corporation as coming from profits of such fiscal year, thus reducing the invested capital for the current year. That is, if a corporation having an invested capital of $100,000 on Jan. 1, 1919, paid a dividend of $20,000 on Feb. 1, that dividend will be considered as reducing the invested capital as of Jan. 1, 1919, by one month, thus increasing 1919 taxes.

If such dividend were paid instead on April 1, 1919, and if the approximate earnings up to that time since the beginning of the year after allowing a reserve for taxes were sufficient to meet the dividend payment, the invested capital Jan. 1, 1919, would not be affected by this dividend payment. This only gives a brief idea of the complexities involved.

The best equipment for the preparation of income tax returns is a scientific, double entry set of books, one which has income and expenses properly analyzed. The writers have been asked frequently to prepare returns by taxpayers whose books did not show the facts, or where inventories were not "taken" and had to be estimated in the best way possible. In such cases, the expense to these taxpayers was greater than if a proper system had originally been installed and audited regularly.

The average taxpayer is honest in his endeavors to pay the government the correct amount of tax, but errors cannot be prevented unless proper and adequate records have been kept.

Under the present act, the commissioner of internal revenue has authority to require taxpayers to keep necessary records, but no provisions are made for penalties to compel compliance with the law. In a recent letter addressed to congress, by Commissioner Roper, it is suggested that a fine of not more than $10,000 or imprisonment not exceeding one year or both should be imposed upon any person who fails to comply with the requirements to keep books in a manner that will clearly reflect the net income.

J. A. Campbell Deplores Soaring Prices

The steel industry is facing the most critical year of its history in 1920, unfavorable factors being the transportation difficulties and the tendency of opportunists to take advantage of conditions and advance prices out of reason, according to James A. Campbell, president of the Youngstown Sheet & Tube Co., in his annual statement to stockholders. Mr. Campbell said that his company had advanced prices in line with advancing costs and expects to follow the same policy in the future.

"However the policy before us is not an easy one," he said, "for the reason that there is a wide fluctuation in prices. We fear that if the policy of opportunists to get all the traffic will bear is pursued to a great extent, it will soon land us upon a plane so high that the demand for material will cease on account of excessive prices asked. Our policy will be to keep our business on an even keel, making a reasonable profit on our output. If manufacturers exercise decent restraint in the setting of prices the deflation period which must follow the inflation of the war would be crossed in good order."

The strike last fall cost the company $2,252,202, President Campbell estimated. Had the company's representation plan been in effect sufficiently long for the employes to realize its merits, he declared that they would not have responded so easily to outside agitation.

During 1919 the company earned $5,449,739 as compared with $14,589,488 in 1918. Gross sales amounted to $55,354,361 and the amount of finished material produced was 705,254 tons. Comparative figures covering 1919 and 1918 operations follow:

	1919	1918
Gross earnings	$11,422,709	$25,952,118
Net earnings	5,449,730	14,589,488
Dividends	2,914,993	4,394,721
Added to surplus	2,534,746	10,194,767
Wages	20,084,420	22,157,000

American Chain Co. Buys Page Steel & Wire

Purchase of the Page Steel & Wire Co., Adrian, Mich., by the American Chain Co., New York, has been officially announced. The news of this transaction without the name of the purchaser was given in the IRON TRADE REVIEW of Feb. 12.. The American company has acquired 90 per cent of the outstanding stock of the Page company, the largest purchase having been made from the estate of the late J. Wallace Page. Some of the minority stockholders objected to the cash price being offered them for their holdings, which was fixed at the rate of $60 a share for the first preferred; $40 a share for the second preferred and $3 a share for the common. The total outstanding stock is $2,800,000, consisting of $800,000 first preferred, $1,000,000 second preferred, and $1,000,000 common. The Page company operates two plants, one at Adrian and the other at Monessen, Pa.

The purchase of the plants by the American Chain Co. is in furtherance of its policy to fortify itself with a supply of raw material. A few weeks ago the company purchased the Highland Iron & Steel Co., with bar iron mills at Terre Haute, Ind., and Chicago. The Chain company was organized in 1912 in New York to take over the chain manufacturing business of the Oneida Mfg. Co., at Utica, N. Y., together with the plant at Sherril, Pa. In 1916 the automobile tire chain business of the Weed Chain Tire Grip Co., Bridgeport, Pa., was purchased. The company also owns plants at York, Pa., and Norfolk, Va. W. B. Lashar, Bridgeport, Conn., is president.

Complete Merger of Auto Parts Companies

Merger of the Standard Parts Co. and the Eaton Axle Co., two of the largest automobile parts manufacturing interests in Cleveland, into a single organization with a capitalization understood to be planned at $35,000,000, has been announced. Full details of the plan have not yet been made public. A syndicate of Cleveland financial interests will finance a broad expansion program for the new concern, it is said. J. O. Eaton will be president and general manager of the Standard Parts Co., with which the Eaton company has been consolidated. The axle company, however, will retain its corporate identity. The output of the new organization will embrace bearings, springs, axles, rims, forgings and other parts. The Standard Parts Co. comprises the Standard Welding Co., Perfection Spring Co. and the American Ball Bearing Co. of Cleveland; the Western Spring & Axle Co. of Cincinnati; the Bock Bearing Co. of Toledo, as well as plants at Flint and Pontiac, Mich.; Connersville, Ind.; Wheeling and Canton. The Eaton Axle Co. plant is now being built.

Increases Capital

An increase from $1,500,000 to $3,000,000 has been made in the capital stock of the Electric Alloy Steel Co., Youngstown, O., in order to take care of oversubscription of stock, President Louis J. Campbell said in explanation of the increase that it would not be sold at this time but would be held as treasury stock, the original capital being sufficient to meet working demands. The original stock, he said, was oversubscribed several hundred thousand dollars and the directors had the choice of refusing the oversubscriptions of cutting down the subscriptions of some of the larger subscribers or of increasing the capital stock to take care of the surplus.

Tool Selling Is Halted Slightly

Various Factors Combine to Lower Sales Totals Although Several Sizable Lots Have Been Booked — Inquiries Continue Fairly Numerous in All Centers — Crane Business Not as Active as in Recent Weeks

ALTHOUGH affected by various factors such as the foreign exchange, railroad labor uncertainties, and advancing prices, the machine tool business in the chief selling centers still presents many favorable aspects. In the east, three orders in particular, recently booked, will total around $500,000. These were placed by the New Britain Machine Co., Willys Corp., and the Mercer Motors, Inc. Another large purchaser was the Columbia Graphaphone Co., Bridgeport, Conn. Fabricating equipment was purchased by the American Metals Co., for export to Mexico; Williams Bridge Co., Syracuse, N. Y.; American Car & Foundry Co., Milton, Pa.; and the General Electric Co., Pittsfield, Mass. The New England Structural Co., Everett, Mass., is in the market for fabricating machinery and forging equipment is wanted by the Staten Island Shipbuilding Co., New York City. Several sizable lists are expected in the east from various concerns.

In Chicago, advancing prices seems to have called a halt upon buying, although the demand remains fairly heavy. The Continental Can Co., wants 15 miscellaneous tools. In Canada, the exchange situation is proving a handicap to certain sellers. Pittsburgh dealers report a steady rather than heavy demand. Cleveland dealers profess themselves satisfied with the present rate of inquiry although a slight falling off is noted, with some buyers curtailing their appropriations. The chief buyer to close recently in Cleveland, was the Pierce-Arrow Motor Car Co., Buffalo, whose purchases are expected to run up over $1,000,000. The Trumbull Steel Co., Warren, O., is in the market for seven large tools. The Torbensen Axle Co. and the Eaton Axle Co., Cleveland, both continue in the market, the latter for a large amount, buying on which was held up because of its recent merger with the Standard Parts Co. Other companies to seek equipment in Cleveland and elsewhere are the Jambor Mfg. Co., Milwaukee; Top-Stewart Tractor Co., Clintonville, Wis.; Lewis & Milligan, Inc., Automobile Parts Co., Spacke Machine & Tool Co., Indianapolis Pressed Steel Co., Indianapolis; Cobb Electric Appliance Co., Boston; and the American Engineering Co., New Britain, Conn.

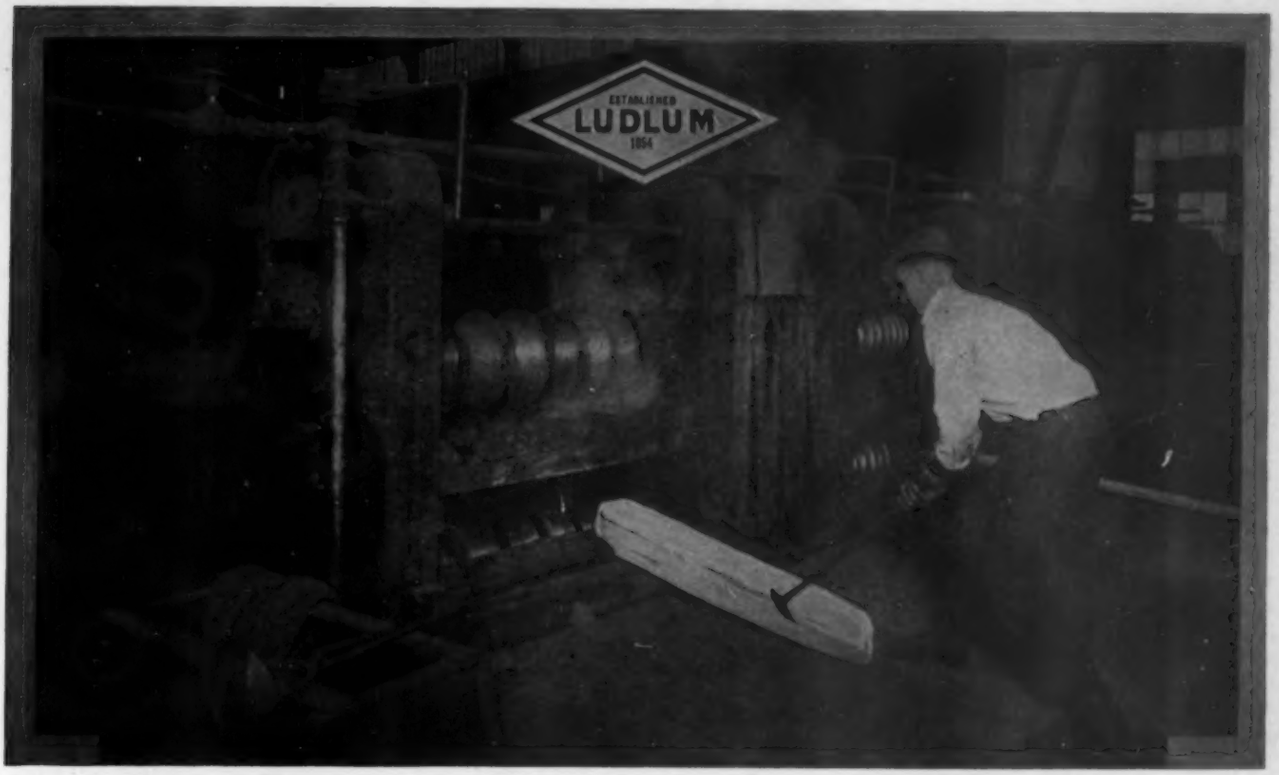
Crane inquiries and awards are not as numerous as a few weeks ago. The Solvay Process Co., Syracuse, N. Y., wants five; the Otis Steel Co., Cleveland, six; The American Steel Co. of Cuba, a subsidiary of the Pressed Steel Car Co., Pittsburgh, is seeking seven for export to Cuba; the United Engineering & Foundry Co., Pittsburgh, the Perth Amboy Dry Dock Co., Perth Amboy, N. J., and the Central Foundry Co., New York, desire two each, while the American Metal Co., New York, and the Pennsylvania railroad, Columbus, O., are in the market for three electric cranes each for shipment to Mexico. The Pratt Engineering Co., New York, is buying cranes for various chemical companies. The Sistersville Tank & Boiler Co., Sistersville, W. Va., closed on three while the Carnegie Steel Co. bought four.

Three Tool Orders Aggregating $500,000 Booked

THREE orders aggregating close to a half million dollars are outstanding in the activity of the eastern machine tool market. One order, involving more than $200,000 worth of miscellaneous machines, was placed by the New Britain Machine Co., New Britain, Conn.; another calling for $125,000 worth of special machinery, including a number of multiple drills was closed by the Willys Corp., Elizabeth, N. J., and the third, aggregating a similiar value in standard machines, was bought by the Mercer Motors, Inc., Trenton, N. J. This latter company has just placed a contract with the Standard Construction Co., Philadelphia, for several plant additions. Another recent contract is that of the Bessemer Motor Truck Co., Holmesburg Junction, Pa., for the erection of an assembly shop. Edwin E. Hollenback, Inc., Philadelphia, was the successful bidder. The Columbia Graphophone Co., Bridgeport, Conn., has commenced to buy on the recently mentioned list of equipment for Baltimore and Toronto, Canada, involving several hundred thousand dollars worth of miscellaneous tools.

E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del., is said to be sounding out the market, preparatory to issuing a list. It is reported that the Du Pont interests are planning to establish soon an automobile plant near Philadelphia, instead of in Wilmington, as originally contemplated. Inability to obtain sufficient help in Wilmington is given as a reason for the change in plans. Another automobile plant to be erected in the East is that of the Murray Motor Car Co., formerly of Pittsburgh. A site has been purchased in Newark, N. J., and the first unit, costing $100,000, is to be completed within 90 days. Four additional units are to be built later. It is said that the plant will be equipped largely from machinery now in storage in New York City. The company will build 8-cylinder cars.

The market on fabricating equipment continues brisk, with buying confined principally to small orders, although several sizable lists are out. Included among buyers of



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the past week are the American Metals Co., 61 Broadway, New York, the equipment being for Mexico; the Williams Bridge Co., Syracuse, N. Y.; the New York, New Haven & Hartford railroad; and the American Car & Foundry Co., which bought a couple of machines for Milton, Pa. The latter company is yet to close on a sizable list for its Chicago plant. A small buyer has also been the General Electric Co., the equipment going to Pittsfield, Mass. This company has awarded a contract to the William M. Bailey Co., Boston, for a $75,000 addition to its plant at Windsor, Conn. The Staten Island Shipbuilding Co., New York City, is inquiring for some small forging equipment. The New England Structural Co., Everett, Mass., is in the market for fabricating machinery.

A $1,000,000 plant is to be erected by the Garford Motor Truck Co. on the Plaza in Long Island City. The plant will have 25,000 square feet of floor space, and, according to reports, will be used for assembly purposes.

The largest inquiry to be noted in the eastern crane market is that of the Solvay Process Co., Syracuse, N. Y., involving four 25-ton electric cranes, and one 35-ton crane. The latter will have a span of 29 feet, and the former, spans ranging from 61 to 70 feet. This company and the General Chemical Co., several weeks ago, organized the Atmospheric Nitrogen Co. with a capital of $5,000,000 to build a $1,000,000 plant. E. L. Pierce, head president of the Solvay company, was made president of the new concern. The New England Structural Co., Everett, Mass., is inquiring for a 25-ton electric crane, with 60-foot span. The bureau of yards and docks closed bids Feb. 18 on a 5-ton electric crane, with 38-foot 10-inch span, and a 10-ton electric crane, with a 36-foot span. The Perth Amboy Dry Dock Co., Perth Amboy, N. J., will likely close this week on two 10-ton cranes, with 27 and 38-foot spans respectively. Early action, it is thought, will also be taken by Stone & Webster, Boston, on a 50-foot electric crane for Lowell, Mass. The American Metal Co., 61 Broadway, New York City, will award within the relatively near future three electric cranes for Mexico. The list has been inactive for several weeks, and includes one 5-ton electric crane, with 34-foot span, and two 10-ton electric cranes, with 20 and 50-foot spans, respectively. The Central Foundry Co., 90 West street, New York City, is inquiring tentatively for two 5-ton electric cranes, with 75-foot span, for Birmingham, Ala.

The Pratt Engineering Co., 480 Lexington avenue, New York City, has placed a 10-ton crane, with 10-ton auxiliary and 100-foot span, for the Tennessee Copper & Chemical Co. with the Cleveland Crane & Engineering Co., Wickliffe, O. It has also awarded a 10-ton crane, with 10-ton auxiliary and 80-foot span, for the Jarecki Chemical Co., Cincinnati, to the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y. This latter company has been also awarded within the past week a 10-ton crane by the Heddon Iron Construction Co., Elizabeth, N. J.; a 5-ton, 4-motor grab bucket crane by the Bethlehem Steel Co., Bethlehem, Pa.; a 5-ton electric crane by a shoe manufacturer of Binghamton, N. Y.; a 1-ton and a 3-ton traveling crane by the Hudson Motor Car Co., Detroit; two small electric cranes by the United States Aluminum Co., reported for Exeter, N. J.; and a 3-ton crane by the Elmira Foundry Co., Elmira, N. Y. The American Smelting & Refining Co. placed a 15-ton electric crane for shipment to Mexico with the Niles-Bement-Pond Co., New York City. The Concrete Steel Co., 42 Broadway, New York City, awarded a 5-ton electric crane for Long Island City, N. Y., to Victor R. Browning, Cleveland. The Standard Oil Co., 26 Broadway, New York City, bought a Browning locomotive crane for New Orleans. The Hainesport Mining & Transportation Co., Philadelphia, purchased a 35-ton locomotive crane from the Link-Belt Co., Chicago.

Various Factors Hold Up Crane Awards

CRANE inquiries still are numerous in the Pittsburgh district, but only a few are being closed, prospective buyers showing considerable hesitancy. This, to some extent, may be ascribed to the uncertainty in business circles born of the foreign exchange situation, the weakness of the stock market and the general railroad situation. Builders are not particularly anxious for business at present, for not a few of them are without full supplies of girder plates and other forms of steel and those having tonnages under contract are not getting either prompt or full shipments against them owing to the car shortage. Longer delivery dates are being named against new inquiries by a number of crane makers because of this situation, which is considerably delaying the completion of orders of long standing. In some of the recent awards, it has been because of the ability of successful bidder to make early delivery rather than the price which has counted most.

The Otis Steel Co., Cleveland, is looking for six cranes, including three 10-ton, 3-motor, 75-foot span cranes, one 10-ton, 3-motor, 75-foot, 9½-inch span crane, one 10-ton, 3-motor, 40-foot span crane, and one 25-ton, 4-motor, 90-foot span crane. The American Steel Co. of Cuba, a subsidiary of the Pressed Steel Car Co., Pittsburgh, is seeking seven cranes for a new plant to be erected in Havana. This inquiry includes one 2-ton crane and six of 5 tons, with spans varying from 30 to 72 feet. The Pennsylvania railroad, lines west, wants a 250-ton crane of 85-foot span, for its Columbus, O., shops and also a 50-ton double trolley, 80-foot span crane and a 10-ton, 82-foot, 9½-inch span auxiliary erecting crane for the same works.

The Sisterville Tank & Boiler Co., Sisterville, W. Va., recently closed for three cranes with the Euclid Crane & Hoist Co., Euclid, O., while the Carnegie Steel Co. has closed with the Alliance Machine Co., Alliance, O., for four 5-ton, 90-foot span cranes for its Upper Union mills, Pittsburgh. The United Engineering & Foundry Co., Pittsburgh, is expected to close shortly on two 35-ton cranes with 5-ton auxiliaries for its Canton, O., plant.

Machine tool demands are coming out steadily, but no important lists recently have been issued. The Allis-Chalmers Mfg. Co., Milwaukee, has secured the contract for the motor generator sets, transformers and switchboards for the plant extensions of the Union Electric Steel Co., East Carnegie, Pa., while contract for the furnace controls and transformers has been placed with the Westinghouse Electric & Mfg. Co., East Pittsburgh.

Cleveland Sellers Optimistic Over Outlook

WHILE some slackening of the inquiry rate is noted among Cleveland machine tool sellers, sufficient business is being done to roll up a satisfactory aggregate. Optimism generally entertained, is regarding the business outlook, although here and there dealers are curtailing their buying for stock, and one or two manufacturers are cutting down their machinery requirement programs. It is now thought that purchases by the White Motor Co., Cleveland, will not total as large as originally intended; it is understood that some appropriations have been abbreviated. On the other hand the Pierce-Arrow Motor Car Co., Buffalo, is going ahead on its list which is estimated to run into a value of well over $1,000,000. It recently purchased 20 multiple spindle drills, which will invoice around $100,000 from one Cleveland dealer's

FARRELL-CHEEK STEEL CASTINGS

These men are vitally interested in your castings.

And they are the best moulders in the country.

Every man in this organization must not only qualify in his line, but must display the enthusiasm and desire of producing the best castings that can be made.

As a result our castings have individuality. *Try them.*

FARRELL-CHEEK STEEL FOUNDRY COMPANY

"Makers of Steel Castings that are a little better than the next best."

SANDUSKY, OHIO, U. S. A.

F C

STAFF

representative. The rest of the list comprises miscellaneous machine tools. Another buyer of note in Cleveland recently is the Cleveland Worm & Gear Co., 1611 East Forty-first street. Its purchases included a large Ingersoll slab miller and a Lucas boring mill. The Grant Tool & Gage Co., St. Clair street, Cleveland, closed on a No. 3 Cincinnati milling machine. It is understood to have made other equipment purchases and to be in the market for other tools.

One attractive inquiry to reach Cleveland dealers comes from the Trumbull Steel Co., Warren, O. It calls for seven large tools, including two planers, shapers, turret lathes, etc. The Nickel Plate railroad has issued an inquiry for a number of tools. The Cleveland Tractor Co., Cleveland, which has been an active purchaser of late, continues to issue inquiries from time to time as does the Torbensen Axle Co., that city. The Eaton Axle Co., Cleveland, recently organized to build a plant and later taken over by the Standard Parts Co., still is in the market for considerable equipment, the merger details acting as a deterrent to its equipment buying. No activity from a machine tool standpoint is noted as yet on the part of the Fisher Body Ohio Corp., which contemplates rushing its huge plant to completion. It will require a large amount of woodworking machinery as well as general machine shop equipment. In all probability the Marsh Motor Co., which moved to Cleveland from Brockton, Mass., will want to exchange some of its equipment and out-and-out purchases will be few. Details concerning the activity of the Duesenberg Motor Car Corp., which was to buy $450,000 worth of equipment are lacking.

P. F. Hackenthal, 404 Century building, Cleveland, is acting as chief engineer for the Paragon Motor Car Co., which is to build a plant at Connellsville, Pa. He has charge of making arrangements for the equipment and is understood to be preparing a large list. The Van Dorn Iron Works Co. and the American Multigraph Co., also are issuing inquiries for equipment as needed, and recently made some purchases. The Vichek Tool Co., 10709 Quincy avenue, which recently suffered a fire, will replace some of the damaged equipment in all probability, although it is understood that most of the machinery had been removed to its other plants.

Inquiries from a distance continue to make their appearance in Cleveland. Several of interest come from Indianapolis and vicinity. Lewis & Milligan, Inc., Indianapolis, wants screw machnies, grinders, furnaces, etc. The Automotive Parts Co., that city, is in the market for a general line of machine tools, motors, transmission equipment, enameling ovens, etc. The Indianapolis Pressed Steel Co., that city, is issuing a comprehensive list of punching, drawing and stamping presses, hammers, machine tools and tool room equipment. The H. J. Frank Foundry & Machine Co., Davenport, Iowa, has issued a $10,000 list of machinery requirements for a new addition 80 x 100 feet. The E. A. Couturier Co. Ltd., La Porte, Ind., will buy $25,000 worth of equipment including some spinning lathes. The Spacke Machine & Tool Co., Indianapolis, will require considerable equipment to carry out its plans of expansion to increase the output of its small automobile. The Jambor Mfg. Co., 911 Center street, Milwaukee, wants presses, hammers, as well as equipment for making tools, dies, etc. The Topp Stewart Tractor Co., Clintonville, Wis., will buy some machine tools. The Cobb Electric Appliance Co., Boston, Mass., wants general machine shop equipment, including engine lathes, planer, milling machine, stamping machine, etc. R. F. Boger is purchasing agent. The American Engineering Co., New Britain, Conn., wants several furnaces, power presses, etc., for a new forge shop.

Lists are expected soon from the Red Wing Products Co., 1519 East Thirty-second street, Cleveland, which states it will erect a machine shop; from the Greenwood Machine Co., Canton, O., recently incorporated by J. B. Weida and others; from the Walker-Liberty Engine Co., Detroit, organized by Albert H. L. Walker, 48 Kerwin avenue, to do a general machine shop business; from the Otwell Mower Co., incorporated at $130,000 by Ralph B. Otwell, 967 Woodward avenue, Detroit, to manufacture tractor equipment and farm implements; from the Thew Automatic Shovel Co., Lorain, O., which is erecting an addition; and from the Lorain Machine & Auto Co., Lorain, O., incorporated recently at $230,000.

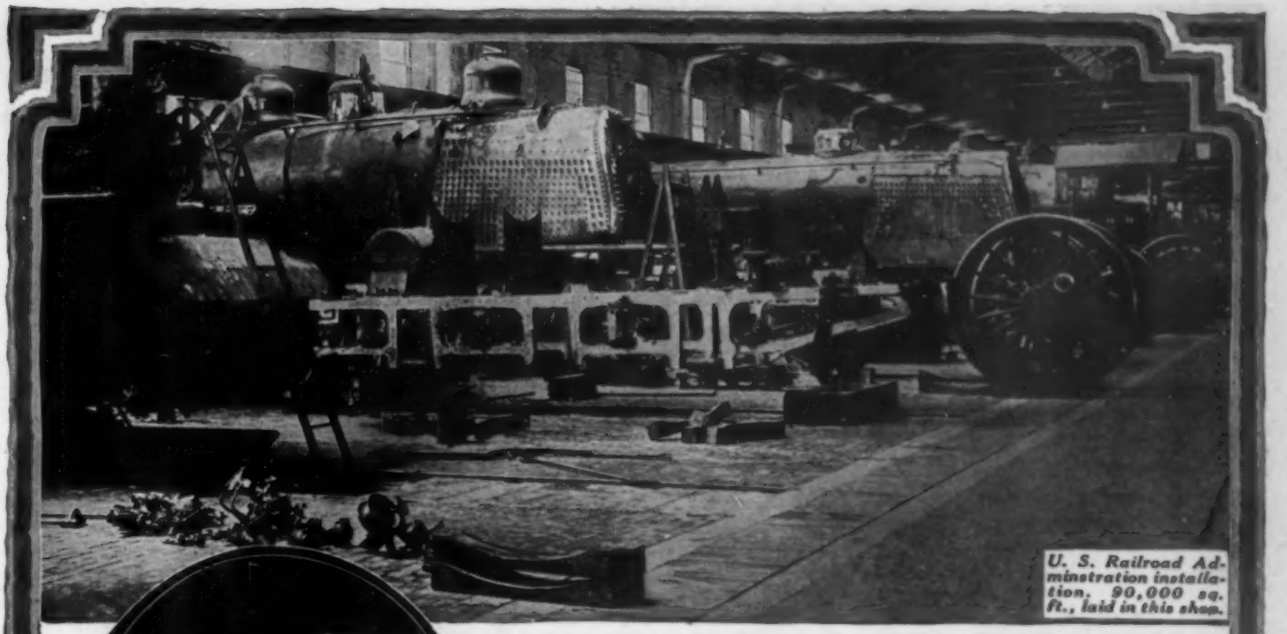
Chicago Sellers Note Fewer Inquiries

WHILE demand for machine tools in the Chicago district is still heavy, some sellers note fewer inquiries. It seems probable that recent advances of 10 to 25 per cent in most lines have brought about this condition. Also numerous inquiries have been closed which were pending when the increase in quotations was about to be put into effect. Demand is strong for large lathes of 42-inch and 48-inch swing and a local dealer recently disposed of three in one lot. The Continental Can Co. is inquiring for a list of about 15 miscellaneous tools. Railroads are not coming forward in this district, although reports are that eastern roads have been buying some equipment. Secondhand machinery is not active as prices asked by owners usually are too high to allow the equipment to be turned over at a profit.

Exchange Rate Handicaps Canadian Dealers

PREVAILING exchange conditions are causing no little amount of inconvenience to dealers in Canada who are handling American machinery and machine tools. The present difference between the Canadian and American dollar is upwards of 15 per cent, which has to be made up by Canadians who are purchasing goods in the United States market. While this has not been the means of hurting American sales in the Dominion, on account of the pressing demand for machinery and tools, there is a feeling that if British and Canadian manufacturers are shortly in a position to supply more of the equipment needed here, there will be a big slump in American sales in Canada's market. Some United States concerns are endeavoring to overcome the exchange handicap by establishing accounts with Canadian banks and investing collections from Canadian sales in the Dominion, enabling buyers of American machinery and tools to make checks payable in Canada, thus doing away with the necessity of paying the additional 15 per cent on exchange account in addition to the amount of their bills.

The demand for all classes of machinery and machine tools continues brisk, with numerous inquiries coming in for new equipment. The demand for used and re-built equipment is also active. The Canadian National Railways sent out a fairly good sized list this week for the Toronto, Ont., shops. The Galt Brass Co., Galt, Ont., will purchase equipment. The Canadian General Electric Co., Peterboro, Ont., improvements and equipment will cost about $1,000,000. The Wood Hydraulic Hoist & Body Co., Detroit, will shortly be in the market for machinery for Windsor, Ont. The Canadian Nathan, Ltd., Hamilton, Ont., will install new machinery in the plant of the Canadian Chadwick Metal Co., which it has just acquired and which it will remodel. The Star Specialty Co., Ltd., 661 Queen street East, Toronto, is in the market for an 18 or 20-inch shaper. The Canadian West Electric Co., 1221 Osler street, Regina, Sask., will spend $40,000 on improvement and equipment for its plant.



U. S. Railroad Administration installation, 90,000 sq. ft., laid in this shop.

Kreodone EVERLASTING WOOD BLOCK FLOORS

Get the *Genuine KREODONE* Blocks

Watch that Spelling — it means Service

Write for our New Illustrated Catalog

Aggressive Toughness that Wins Against Abuse

THE cutting, grinding, splintering action of heavy locomotive car wheels and drivers, the crushing weight of big, cumbersome boilers and the trip-hammer impacts of heavy falling objects, have failed to make much of a "dent" in the 90,000 square feet of wood block floor in the above railroad shops since installed by request of the U. S. R. R. Adminstration.

Why? Simply because our selected, long-leaf yellow pine blocks have an aggressive quality and special toughness which "combats" the roughest abuse successfully.

In addition each block is impregnated with our *pure* creosote oil to immunize against water, oil, acids and every contributing cause to decay and disintegration.

The oil contains no tar. We guarantee each individual block *not to bleed.*

After over 20 years spent in making wood block floors we are able to make blocks and lay floors that stay laid longer than any other type of floor. There's only one K-R-E-O-D-O-N-E. Fasten that spelling in your mind and specify KREODONE in your flooring contracts.

Our engineers will gladly help you with specifications and estimates

REPUBLIC CREOSOTING CO., Indianapolis, Ind.

PLANTS: Indianapolis Minneapolis Mobile Seattle Norfolk

BRANCH SALES OFFICES:

315 Peoples Gas Bldg., Chicago
206 Erie County Bank Bldg., Buffalo
152 Bay Street, Toronto, Canada
Berkley Ward, Norfolk
222 Society for Savings Bldg., Cleveland
31 Transportation Bldg., Philadelphia
828 Plymouth Bldg., Minneapolis
445 Central Bldg., Seattle
Masonic Temple, Mobile
211 Hammond Bldg., Detroit

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

PORTLAND, ME.—The Becker Mfg. Co. has been organized with $1,875,000 common stock and $500,000 preferred, to engage in the manufacture of iron and steel products. Alexander D. Morgan is president.

WATERVILLE, ME.—The Waterville Mfg. Co., manufacturers of potato pickers, will build a 55 x 300-foot, 2-story factory.

BARTON, VT.—The Fairbanks-Redfield Co. contemplates a 2-story, 58 x 150-foot factory.

WINDSOR, VT.—Waldron & Van Winkle, New York, industrial engineers, will take bids shortly for the erection of a 100 x 500-foot foundry for the Windsor Foundry Co.

ATTLEBORO, MASS.—The Owren Casting Co. has been incorporated with $10,000 capital, by Einar Owren, Charles M. Robbins and W. A. Briggs.

ATTLEBORO, MASS.—The H. W. K. Co. has been incorporated to make jewelry, novelties, etc., with $100,000 capital, by James L. Wiggmore, George E. Kissick and F. E. Tappan.

BOSTON.—The Metropolitan Marine & Fuel Co. has been incorporated with $1,000,000 capital, by E. P. Carver Jr., Charles L. Hadley, Melrose, Mass., and A. J. Plummer.

BOSTON.—The Standard Iron & Metal Co. recently was incorporated with $25,000 capital, by Solomon Merin, Charles Saltz and Samuel Curewitz.

BOSTON.—The Simpson Patent Dry Dock Co. has let a contract for a boiler house to cost about $20,000.

BOSTON.—The Simbroco Stone Co. has let the contract for a 65 x 400-foot foundry building, a 50 x 90-foot administration building, power house and crusher plant.

BOSTON.—The Perin Automotive Engineering Co. has been incorporated with $300,000 capital, by Donald W. Perin, George H. Hudson, Somerville, Mass., and Robert H. Gallagher.

BOSTON.—The Burnell-Faulkner Co. has been incorporated to build trucks, automobiles, etc., with $500,000 capital, by James F. Bacon, William P. Kelley, Braintree, Mass., and George F. Howland.

BOSTON.—The Pittsburgh Textile Machinery & Steel Tool Co., Inc., has been incorporated to build textile machinery and steel products, with $49,000 capital, by Samuel Rosenbaum, Julius Olstein, Hyman Davis and M. D. Seifer.

GARDNER, MASS.—The Gardner Mfg. Co. has been incorporated to engage in the manufacture of metal goods, with $50,000 capital, by William S. Taplin, J. W. Quinlisk and Ralph M. Ryan.

GREENFIELD, MASS.—The Woods Hardware Specialties Corp. has been incorporated to make axes, etc., with $99,000 capital, by Albert E. Taylor, Chicopee Falls, Mass., John L. Eppler and Edward D. Woods.

HOLYOKE, MASS.—The Century Mfg. Co. manufacturers of washing machines, has let the contract for two buildings, one 74 x 150 and the other 42 x 90, to cost $70,000.

LYNN, MASS.—Bids have closed for a 1-story, 40 x 175-foot addition to the tannery of the Thomas A. Kelley Co.

LYNN, MASS.—The Lynn Machine Screw Co. has been incorporated with $75,000 capital. C. D. C. Moore of Swampscott, Mass., is president and treasurer.

LYNN, MASS.—The Furber Mfg. Corp. has been incorporated to make spark plugs, tools and accessories with $100,000 capital, by Frederick M. Furber, Harry Fisher, Brookline, Mass., and R. T. Parker.

MEDFORD, MASS.—The Practical Products Co. has been organized to manufacture metal products, appliances and devices with a capital of $10,000.

NEW BEDFORD, MASS.—The Continental Wood Screw Co. plans a plant, 2-stories, 52 x 75 feet.

NORFOLK DOWNS, MASS.—The Pneumatic Scale Corp. has let the contract for a $200,000 building.

NORFOLK DOWNS, MASS.—V. Peterson will build a 50 x 117-foot machine shop.

SPRINGFIELD, MASS.—Gilbert & Barker Mfg. Co. will build a power plant.

SPRINGFIELD, MASS.—Cheney-Bigelow Wire Works will build a 2-story, 45 x 466-foot building to cost $100,000.

SPRINGFIELD, MASS.—The Granite City Pressed Brick & Stone Co. has been incorporated with $250,000 capital, by Harlow S. Halliday, John H. Macmillan, George A. Nacon, Joseph W. Hayes, Allan C. Inman and Eben J. P. Sullivan.

SPRINGFIELD, MASS.—Smith & Wesson, manufacturers of revolvers, has purchased 25 acres here which may eventually be used as a site on which to erect a new plant. The company cannot expand in its present location because of contemplated changes in the street by the city.

WARREN, MASS.—The plant formerly occupied by the Monarch Valve Co. has been sold by A. H. Hovey, Springfield, Mass., to E. T. Judkins, Providence, R. I.

WORCESTER, MASS.—The Worcester Wire Works, Inc., will build a $25,000, 2-story addition.

WORCESTER, MASS.—The Moore Spring Hinge & Mfg. Co. has been incorporated for $90,000. Elisha Moore is president.

PAWTUCKET, R. I.—The Taunton Mfg. Co. has been incorporated with $100,000 capital, by Ambrose Kennedy, Woonsocket, R. I., M. F. Hill and James T. Greene.

BRIDGEPORT, CONN.—The Bridgeport Screw Co. plans a plant addition, 1-story, 50 x 100 feet.

BRIDGEPORT, CONN.—The Bridgeport Hardware Mfg. Corp. plans a plant addition at an estimated cost of $10,000.

BRIDGEPORT, CONN.—The Bridgeport Castings Co., whose plant was burned recently, will be rebuilt at once. The new structure will cover 22,000 square feet.

BRIDGEPORT, CONN.—The Remington-Yost Typewriter Co. will move to Flushing, L. I., N. Y.,

Lathes Not Wanted

RECENT sales of plant equipment by the British disposal board of the ministry of munitions have realized poor results, mainly because lathes generally, have become a drug on the market. A big demand existed for this class of machinery some months ago but large amounts have been thrown upon the market. It also has become difficult and nearly impossible in some cases to convert them from the special war purpose for which they have been used into general utility machines. It is understood that the government still has a large number on its hands. Most of these however, it is thought, will eventually find their way to the scrap heap.. At a recent sale three 12-inch center double-geared, sliding and surfacing turret lathes sold at £75 each, and this was the highest figure reached. A similar machine was sold at £72. Motors, however, realize splendid prices and one of the highest prices paid at this sale was £965 for a 6-ton steam truck, an average of £90 was realized for a number of 7½-horsepower motors with starters and switches.

Government Inquiries

BIDS on the following equipment are desired by the navy department, bureau of supplies and accounts:

Seven saw tables, six band saws, six wood lathes, six drill presses, six emery grinders, 5560, eastern and western yards, March 2.

Three drill presses, 5572, Puget Sound, Feb. 27.

Six precision lathes and three milling machines, 5580, eastern and western yards, March 2.

Three air compressors, tanks, regulators, burners, brackets, hot plates, blow torches and two-foot bellows, 5587, Philadelphia, Feb. 27.

Three cylinder boring machines, 5583, Puget Sound, March 2.

One pneumatic hammer, 5600, Boston, Feb. 27.

One internal combustion engine, 5601, Mare Island, March 2.

Two traveling cranes, 5603, Indian Head, Feb. 27.

One refrigerating machine, 5615, Coca Sola, March 2.

Schedule numbers, places of delivery and dates of openings follivery and dates of openings follow the specifications of the tools.

Gasoline Tructractor Cuts Plant Haulage Costs

CUMBERSOME loads are transported by the Clark Tructractors easily and speedily. This sturdy little machine delivers its load and dumps it *where it is wanted.*

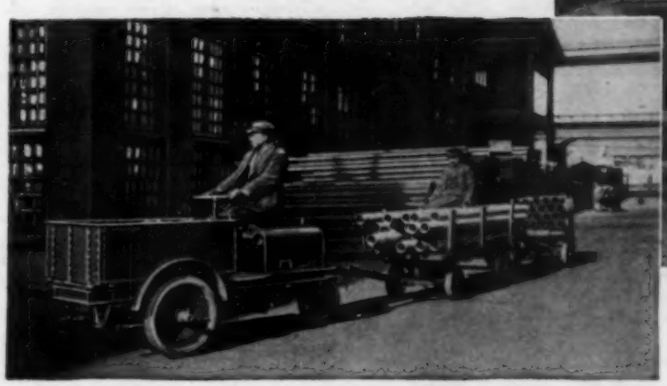
By carrying the load in front, materials may be dumped directly into bins or machines.

The Clark Tructractor carries 2500 pounds and pulls loaded trailers at the same time. It travels as fast as 12 miles per hour or as slowly as ¼ mile per hour through aisles and doorways —*anywhere within the plant or yard.*

Save haulage, time and money with a Clark Tructractor.

A Booklet shows in detail the many duties performed by Clark Tructractors. Write for your copy.

CLARK TRUCTRACTOR COMPANY
Michigan Avenue, Chicago



CLARK TRUCTRACTOR Co CHICAGO U.S.A.

CLARK TRUCTRACTOR

THE Gasoline Industrial Truck

Say you saw it in THE IRON TRADE REVIEW

June 1, because of the lack of available factory buildings in Bridgeport for expansion.

DANBURY, CONN.—The Danbury Foundry Co., Inc., has been incorporated with $25,000 capital, by R. J. Hanain, E. Hanain and W. H. Cable.

MERIDEN, CONN.—The International Silver Co. has started work on a 40 x 130 feet building.

NEW HAVEN, CONN.—Charles R. Hadden, Newark, N. J., has the contract to erect a factory, office, power and spreader buildings for the Kelly Tire & Rubber Co. in West Haven, Conn.

STAMFORD, CONN.—The Yale & Towne Mfg. Co. has awarded the contract for a $360,000, 6-story building, 50 x 202 feet.

TORRINGTON, CONN.—The Torrington Roofing & Sheet Metal Co. has been incorporated with $10,000 capital, by W. H. Morrison, Martin Leininger and B. H. Morrison.

North Atlantic States

ALBANY, N. Y.—William J. Schupp & Son, Inc., has been incorporated with $350,000 capital to manufacture motors, engines, etc., by William L. Schupp, 324 Central avenue, and others.

BROOKLYN, N. Y.—The Todd Shipyard Corp. plans a machine shop at an estimated cost of $35,000.

BROOKLYN, N. Y.—Haefner Bros., 420 East Third street, contemplates a machine shop, 2-stories, 52 x 100 feet, to cost $30,000.

BROOKLYN, N. Y.—The Douglas Iron Works recently was incorporated with $20,000 capital, by J. Krassny, H. Chernin and B. B. Tullin, 1725 Sterling place.

BUFFALO.—The Philadelphia Rubber Works Co. contemplates building a plant in this city.

BUFFALO.—The United States Roller Bearing Co. will build a plant to have 40,000 square feet of floor space. T. W. Tiggany is treasurer.

BUFFALO.—The Niagara Pattern & Model Works, 1453 Niagara street, contemplates a pattern shop, 2-stories, 60 x 82 feet, to cost $25,000.

BUFFALO.—The Sinclair Mfg. Corp. has been incorporated to manufacture motors and engines, with $50,000 capital, by L. L. Sinclair, L. A. Hallstead and J. K. Kennefick.

DUNKIRK, N. Y.—The Continental Heating Co. will build a foundry addition.

NEW YORK.—The Mica Insulator Co., 68 Church street, plans a plant addition to cost $150,000.

NEW YORK.—The Miles Sharpener Corp. has been incorporated to make sharpening devices with $50,000 capital, by M. R. Bracevell, J. and E. Enninson, 1746 West Tenth street, Brooklyn, N. Y.

NEW YORK.—The Wolfer Iron & Steel Corp. recently was incorporated with $25,000 capital, by C Wolfer, D. M. Bluestone and M. Yookers, 1 Madison avenue.

NEW YORK.—The New York Harbor Dry Dock Corp. has been incorporated to construct drydocks, etc., with $8,000,000 capital, by T. L. Croteau, M. A. Bruce and S. E. Dill.

ROCHESTER, N. Y.—The Kellogg Mfg. Co., 3 Circle street, plans a machine shop at an estimated cost of $200,000.

ROME, N. Y.—The Rome Brass & Copper Co. is reported planning to make alterations to its office building at an estimated cost of $12,000.

SYRACUSE, N. Y.—The Self Lock Nut & Bolt Co. will move into its recently acquired plant in East Syracuse.

SYRACUSE, N. Y.—The Syracuse Metal Products Corp. has been incorporated with $5,000 active capital, by A. J. Hemmer, C. P. McArthur and L. E. Doyle.

TROY, N. Y.—The Automotive Equipment Co. has been incorporated with $10,000 capital, by C. P. Snyder, W. Bentz and P. J. George.

UTICA, N. Y.—The O. J. Childs Co., manufacturers of fire extinguishers, is having plans prepared for additions to its plant.

BEAVER FALLS, PA.—The Cannelton Clay & Coal Co. has leased the plant of the Douglass-Whistler Co. at Eastvale and will install machinery.

CORRY, PA.—The United States Radiator Co. will spend $150,000 for additions to its plant.

ERIE, PA.—The Erie Truck Co. will build a plant and purchase equipment for assembling work.

HOLMESBURG JUNCTION, PA.—A 2-story building, 100 x 100 feet, will be erected by the Bessemer Motor Truck Co. Edwin E. Hollenback, Inc., has the contract.

LEHIGHTON, PA.—Several buildings are being erected at the plant of the Lehigh Machine Co.'s plant.

LUMBERVILLE, PA.—The machine shop owned by William Kebbe recently was damaged by fire. The loss was estimated at $15,000.

MONESSON, PA.—The Pittsburgh Steel Co. will spend $80,000 on improvements in connection with its coal and coke handling plant here.

PITTSBURGH.—The American Radiator Co. has bought the property of the Superior Mfg. Co. and will use the building as a distributing warehouse.

POTTSTOWN, PA.—George H. Lees, 149 King street, plans a machine shop addition, 3-stories, 90 x 100 feet, at a cost of $10,000.

POTTSTOWN, PA.—Sotter Bros., Inc., contemplate a factory addition, 1-story, 95 x 120 feet, to cost $100,000.

BOONTON, N. J.—The Yale Piston Ring Co., 560 West Thirty-sixth street, New York, is reported planning an addition 60 x 100 feet.

JERSEY CITY, N. J.—The W. M. Crane Co., Garfield avenue, manufacturer of stoves, has awarded a contract for a plant to include a foundry, to cost $200,000.

NEWARK, N. J.—The James T. Clark Co., 70 Adams street, plans a foundry addition at an estimated cost of $22,000.

NEWARK, N. J.—The Universal Tobacco Machine Co. has awarded a contract for a 1-story building, 100 x 200 and 35 x 100 feet, to cost $100,000.

NEWARK, N. J.—The Stirrup Mfg. Co., manufacturer of metal products, has acquired the property of John Strum & Son, which it will operate in conjunction with its present plants.

NEWARK, N. J.—The Alemite Lubricator Co. of New Jersey has been incorporated with $100,000 capital, to engage in the manufacture of lubricating systems, etc.

NEWARK, N. J.—A $500,000 plant will be erected by the Murray Motor Car Co. on a site in Frelinghuysen avenue. The Murray company operated in Pittsburgh before the war. The company plans to build an 8-cylinder car. The plant unit to be first erected will be 1-story and cost $100,000.

TRENTON, N. J.—The Mercer Motors, Inc., awarded a contract for several additions. The buildings will be one and two stories and will cost about $200,000.

WILMINGTON, DEL.—The DuPont Automobile Co. plans to locate a plant near Philadelphia.

BALTIMORE.—The Locke Insulator Co., Victor, N. Y., will establish a plant in this city.

BALTIMORE.—The Pennsylvania railroad is considering the erection of a warehouse terminal on Clinton street 120 x 600 feet.

BALTIMORE.—The J. C. Eichman Mfg. Co., Bish and Wicomico streets, contemplates a foundry addition, 40 x 40 feet.

BALTIMORE.—The Columbia Graphaphone Factories, Inc., has taken title to a lot as a part of the site for its proposed plant.

BALTIMORE.—The Burt Machine Co. contemplates a machine shop addition, 3-stories, 30 x 40 feet, to cost $10,000.

BALTIMORE.—The Universal Electric Furnace Co., 1520 Fidelity building, has been organized with $150,000 capital, by R. M. Glacken, and others, and will engage in the manufacture of electric brass-melting furnaces.

HAGERSTOWN, MD.—This city contemplates an electric power plant.

SPARROWS POINT, MD.—The Bethlehem Steel Co. contemplates an addition.

NORFOLK, VA.—The Automatic Soda Fountain Corp. has been chartered with a capital of $500,000. A 3-story building, 100 x 100 feet, will be constructed, and $75,000 worth of machinery installed.

RICHMOND, VA.—The Cameron Stove Co. contemplates a foundry.

RICHMOND, VA.—The Southern Stove Works, Inc., plans a stove foundry at an estimated cost of $200,000.

Central States Activity

APPLETON, WIS.—The Appleton Car Mover Co. has been incorporated with a capital of $50,000, to manufacture metal specialties, etc. The incorporators are O. L. Hollister, Allen J. Hoffman and Otto C. Kapke.

APPLETON, WIS.—Articles of incorporation have been filed by L. C., R. O. E. C. and G. H. Schmidt, all of Appleton, in behalf of the Standard Body Corp. The capitalization is $30,000. A factory is being established.

BELOIT, WIS.—The P. B. Yates Machine Co. will start construction of a gray iron foundry, 206 x 264 feet, and also will undertake enlargement of its machine shops at a total cost of $500,000.

BELOIT, WIS.—The Gardner Machine Co. has had plans prepared for a 2-story machine shop addition to its plant, to be built at an estimated cost of $150,000.

BELOIT, WIS.—A gray iron foundry, to cost about $500,000, will be erected here by the P. B. Yates Machine Co. The plant will be 206 x 264 feet. Contracts for the building and equipment will be let before March 1.

EVANSVILLE, WIS.—The Baker Mfg. Co., gas engines, etc., has increased its capital from $800,000 to $1,600,000, and plans to enlarge its plant.

HARTFORD, WIS.—The International Steel Products Co. of Hartford, Wis., has been reorganized with these officers: President, A. F. Schauer; vice president,

JORDAN MOTOR CAR COMPANY

CLEVELAND OHIO

February sixth
1 9 2 0

W. H. Wilcox,
113 The Arcade,
Cleveland,

Dear Sir:-

The writer believes that you will be interested to learn that he has been watching very carefully for the past six months the operation and the results thereof of the cafeteria installed by you.

We are particularly pleased with the complete satisfaction of our dining room service, and also very much impressed with the opportunity it has given our employees to meet at lunch under pleasant conditions. It has tended to promote a much better spirit among the employees.

It is gratifying to say that the returns from the investment are far greater than we can measure in dollars and cents.

Yours very truly,

JORDAN MOTOR CAR COMPANY, Inc.,

Secretary.

PZ/MT

Designed and Built to Meet Your Requirements

The Big Man Grew by Foresight

The above cafeteria equipment made especially by

THE RUSS MFG. CO.

Walworth Run

CLEVELAND, OHIO

Installed and Organized by

THE WILLCOX SYSTEM

113 The Arcade

CLEVELAND, OHIO

Not Expensive But Productive — Worth Your Investigation

Let Us Call at Your Convenience With Photographs and Data

Andrew Portz; secretary, Andrew Martin; treasurer, Julius J. Goetz.

KENOSHA, WIS.—The Simmons Co. has acquired a site at Richmond, Va., where it will build a plant next spring at an estimated cost of $1,000,000.

KENOSHA, WIS.—A. M. Duncan, president of the Duncan Mfg. Co., Freeport, Ill., is negotiating for the lease or purchase of the Peter Jacobs factory building at Kenosha to provide additional manufacturing space for incubators.

KEWAUNEE, WIS.—The Marvel Motor Works has been purchased by Carl Hartmann and associates, Green Bay, Wis., who will continue the business under the name of the Kewaunee Machine Co., which will be incorporated with $50,000 capital.

KOHLER, WIS.—The Kohler Co. is building a gray iron foundry addition 220 x 300 feet, and an engineering building 130 x 262 feet.

MADISON, WIS.—Bids are being taken until Feb. 16 by J. G. D. Mack, state chief engineer, for a one and 3-story machine and service shop, 75 x 55 feet, for the state capitol power plant in Madison.

MENOMONEE FALLS, WIS.—The Schumann Motor Co. is having plans prepared for a 1-story garage and machine shop, 75 x 150 feet.

MILWAUKEE.—The Harley-Davidson Motor Co. is building a 6-story addition.

MILWAUKEE.—Doelger & Kirsten, 505 Cedar street, are building a 1-story machine shop, 90 x 200 feet.

MILWAUKEE.—The Magnetic Mfg. Co., manufacturer of magnetic separators for foundries and smelters, is building a plant, 60 x 120 feet.

MILWAUKEE.—The John Scholtz Sheet Metal Works is moving to larger manufacturing quarters at 1823 Vliet street and will install additional machinery.

MILWAUKEE.—Contracts have been awarded by the Milwaukee Tank Works for two shop buildings, 100 x 200 and 80 x 100 feet, 1-story.

MILWAUKEE.—The Wisconsin Securities Co. has let a contract for a 500 kilowatt steam turbine for the steam station at Manitowoc, Wis.

MILWAUKEE.—The T. L. Smith Co. will build three shop additions, 30 x 58 feet, 49 x 271 feet and 73 x 90 feet.

MILWAUKEE.—Contracts have been let by the Roberts Brass Co., 178 Lincoln avenue, for a 2-story addition, 60 x 75 feet.

MILWAUKEE.—The Doelger & Kirsten Co., manufacturing metal cutting machines, will build a machine shop, 90 x 200 feet, 1-story.

MILWAUKEE.—The Koehring Machine Co. will build a 2-story addition, 30 x 70 feet, to its office building.

MILWAUKEE.—The Milwaukee Tank Works is building a boiler shop 100 x 200 feet and a storage building 90 x 100 feet, at a cost of $75,000.

MILWAUKEE.—The Schwab-Lenott Boiler Co., Sixteenth and Canal streets, has placed contracts for a $50,000 shop addition for which some machinery is being purchased.

MILWAUKEE.—The Badger Metal Ware Co. has been incorporated with a capitalization of $200,000 to manufacture wash boilers and other utensils from tin, galvanized iron, etc. The incorporators are Louis S. Wiener, Harry R. Kuntz and M. A. Landeck.

NEW HISTEIN, WIS.—A special election will be held April 6 on the question of issuing $135,000 municipal bonds to finance the construction and equipment of a complete water works and sewerage system.

PRAIRIE DU CHIEN, WIS.—Articles of incorporation have been filed by the Prairie du Chien Tool Co., capitalized at $50,000, for the purpose of engaging in the manufacture of tools, mechanical appliances, etc. The incorporators are Robert H. Kaftan, W. R. Graves and E. C. Amann.

SHEBOYGAN, WIS.—The Jenkins Machine Co. will remodel its plant and build a 1-story addition, 40 x 80 feet. Some machinery is being purchased. A. G. Studemann is general manager.

SHEBOYGAN FALLS, WIS.—The White Wagon Works plans an addition, 4-stories, 60 x 250 feet, to cost $40,000.

SOUTH MILWAUKEE, WIS.—The Schartow Mfg. Co., which will move its saddlery hardware and automobile accessory works from Racine to South Milwaukee, has awarded the general contract for a 1-story factory, 90 x 300 feet, to be ready about May 1.

SUPERIOR, WIS.—The Safety Steering Gear Co., capitalized at $100,000, has been chartered to manufacture automobile and tractor devices by M. E. Benson and others.

SUPERIOR, WIS.—Local interests have incorporated the Safety Steering Gear Co., with a capital of $100,000 to manufacture steering gears and other parts and appliances for the motor car and truck trade.

TOMAHAWK, WIS.—T. B. Mussen, William Drever and Charles Mussen have organized the Wisconsin Machinery & Paper Co., capital stock, $75,000, to manufacture machinery for producing sand paper, paper box-board and other pulpwood specialties.

TWO RIVERS, WIS.—The Aluminum Goods Mfg. Co. plans a factory building, 3-stories, 41 x 137 feet, to cost $40,000.

WAUSAU, WIS.—The Star Mfg. Co., incorporated with a capital of $1,000,000, will begin work about March 15 on the first unit of a plant to be equipped for making automatic milking machines. E. R. Goode, formerly of Minneapolis, is president.

WEST BEND, WIS.—The Schmidt & Storck Wagon Co., A. C. Fuge, secretary, is taking bids for a 1-story factory, 100 x 300 feet, with a separate power house and three dry kilns.

DETROIT.—The Clayton Lambert Auto Parts Co. plans a plant.

DETROIT.—The Enterprise Foundry Co., Charles Crowlin, 1127 Griswald avenue, contemplates a cupola building, 35 x 40 feet.

DETROIT.—The American Electric Heater Co., Robert Kuhn secretary, 1351 Woodward avenue, will build a 2-story plant, 30 x 130 feet.

DETROIT.—The Federal Bearing & Bushing Corp., L. P. Jones president, 364 Trambley street, will build a plant. Esselstyne, Murphy & Hanford, Marquette building, are architects.

GRAND RAPIDS, MICH.—The Brummeler-Ruggles Metal Products Co. contemplates a manufacturing plant.

HASTINGS, MICH.—E. W. Bliss is having plans prepared for a foundry, 120 x 130 feet, to cost $80,000.

MARYSVILLE, MICH.—The Detroit Edison Co., David Whitney building, is having plans prepared for a 2-story power house, including a steam electric generating unit of 30,000 kilowatt, at an estimated cost of $2,000,000.

CHICAGO.—The Crane Co., 636 South Michigan avenue, contemplates a plant addition.

CHICAGO.—The Monighan Machine Co. plans a building, 110 x 504 feet.

CHICAGO.—The Concrete Steel Co., 3200 West Thirtieth street, is building an addition 80 x 100 feet.

CHICAGO.—The Garden City Spring Works, 2300 Archer avenue, contemplates a storage building, 2-stories, 77 x 119 feet, to cost $40,000.

CHICAGO.—The Advance Pattern & Foundry Co. contemplates a plant addition, 47 x 124 feet, to cost $20,000.

CHICAGO.—The Wildman Boiler & Tank Works, 3020 Carroll avenue, plans an office building, 2-stories, 22 x 50 feet.

CHICAGO.—The Economy Mfg. Co., 328 West Kinzie street, is building the first unit of its new plant, 130 x 264 feet, costing $135,000.

CHICAGO.—The Fruin Drop Forge Works, J. L. Fruin, president, 349 Root street, contemplates a forge shop addition, 1-story, 50 x 50 feet, to cost $10,000.

CHICAGO.—The Standard Steel Casting Co., 910 South Michigan avenue, contemplates two factory buildings, each 1-story, 70 x 250 feet, to cost $200,000.

CHICAGO.—The Liquid Carbonic Co., A. R. S. Brunker president, 209 Ninth street, Pittsburgh, will build a 1-story plant 120 x 148 feet, at Chicago, costing $90,000.

CHICAGO.—The Woodford Engineering Co., M. D. Woodford, manager, 118 North La Salle street, contemplates a machine shop, 2-stories, 44 x 122 feet, to cost $75,000.

CHICAGO.—The General Combustion Co. is building the first unit of its new plant, a storage building with 10,000 square feet of floor area and shortly will start construction of its machine shop and fabricating building.

ROCKFORD, ILL.—The Universal Piston Ring Co., capitalized at $100,000, has been chartered to manufacture piston rings and other devices by W. C. Burdeck and William Stenlund.

ANDERSON, IND.—This city plans a power plant.

CRAWFORDSVILLE, IND.—The H. & D. C., capitalized at $100,000, has been chartered to manufactur automobile shock absorbers by George H. Fosdick, D. M. Peck and E. E. Ames.

HOLTON, IND.—The Ripley Cultivator Co., capitalized at $60,000, has been chartered to manufacture tractors by C. E. Holton, O. J. Shook and H. A. Cass.

INDIANAPOLIS.—The Zenite Metal Co., H. R. Dickwell president, 201 North West street, will build a 1-story addition 200 x 419 feet.

INDIANAPOLIS.—Dean Bros. Steam Pump Works, J. C. Dean, secretary, 323 West Tenth street, plans a machine shop, 2-stories, 52 x 123 feet, to cost $50,000.

KOKOMO, IND.—The Washburn Burner Corp., capitalized at $150,000, has been chartered to manu-

465 Tools Listed

TABULATED by the Chicago district salvage board, ordnance department, Seventy-fourth street and Ashland avenue, Chicago, a list of 465 machine tools, as well as air compressors, furnaces, electrical equipment, etc., is being offered for sale. The list, together with average percentages of condition, follows:

30 No. 3 A 17 x 44-inch Warner & Swasey turret lathes, 75 per cent.
100 18-inch x 8-foot Cisco engine lathes with taper attachment, 85 per cent.
65 6¼ x 24-inch Steinle turret lathes, 75 per cent.
20 each No. 1, 2 and 3 Foster hand screw machines, 90 per cent.
20 No. 1, 2 and 3 Pratt & Whitney hand screw machines, 88 per cent.
20 12 x 24-inch modern cylindrical grinders, 80 per cent.
50 6 x 20 and 12 x 36-inch Fitchburg cylindrical grinders, 75 per cent.
10 24-inch x 10-foot American heavy duty engine lathes, 90 per cent.
20 assorted surface grinders in various sizes, 80 per cent.
40 assorted universal cutter grinders, such as Oakley-Ohio, Wilmarth & Marmon, Cincinnati, etc., 80 per cent.
10 1¾-inch 4-spindle Gridley automatics, 95 per cent.
10 2⅞-inch single spindle Gridley automatics, 85 per cent.
15 No. 52, 53 and 55 National Acme automatics, 100 per cent or new.
12 90-ton Toledo straight side, geared blanking presses, 8-inch stroke, 100 per cent or new.
2 D-3 Minster heavy duty drilling machines, 88 per cent.
1 D-4 Colburn heavy duty drilling machine, 90 per cent.
Assorted air compressors, furnaces and electrical equipment.

W. I. Denny is chairman of the committee on sale of buildings and equipment, in charge.

facture acetylene burners by George H. Washburn, E. H. Southerland and Harry M. Holden.

MARION, IND.—The Marion Foundry & Machinery Co. contemplates four factory buildings.

MIDDLEBURY, IND.—The Hoosier Cab & Body Co., capitalized at $30,000, has been chartered to manufacture automobile specialties by Fred S. Hixon, Harry S. Dover and M. L. Williams.

NEW ALBANY, IND.—The Ames Shovel & Tool Co., Boston, Mass., has purchased property here on which it plans to erect a plant to be used as a foundry. Work will start at once.

AKRON, O.—The foundry of the Wise Furnace Co. recently was damaged by fire.

AKRON, O.—The State Foundry & Pattern Co., 90 Elinor street, has a permit to erect a foundry building at a cost of $30,000.

BUCYRUS, O.—The Bucyrus Iron Co., which is being organized with $125,000 capital, has purchased a site on which it will erect a plant, 70 x 200 feet.

CANTON, O.—The Greenwood Machine Co. has been incorporated with $100,000 capital, by C. H. Greenwood, J. B. Weida, J. W. Weida, Millard F. Weida and H. E. Greenwood.

CLEVELAND.—The American Scrap Metal Co., 1894 East Sixty-sixth street, contemplates a metal storage shed, to cost $10,000.

CLEVELAND.—The J. T. Tractor Co., 5810 Euclid avenue, plans a plant addition, 58 x 125 feet, at an estimated cost of $60,000.

CLEVELAND.—The A. B. C. Appliance Co. has been incorporated with $30,000 capital, by J. O. Singleton, C. Loehr and others.

CLEVELAND.—The Red Wing Products Co., 1519 East Thirty-second street, is reported planning a machine shop, 1-story, 62 x 86 feet.

CLEVELAND.—The Zeman Iron Works Co. recently was incorporated with $50,000 capital, by Mathew Zeman, M. T. Zeman, L. R. Zeman and others.

CLEVELAND.—The plant of the Vichek Tool Co., 10709 Quincy avenue, recently was damaged by fire. The loss has been estimated at $40,000.

CLEVELAND.—The National Bronze & Aluminum Foundry Co., 2539 East Seventy-ninth street, is reported planning an addition, 1-story, to cost about $60,000.

CLEVELAND.—The Merit Motor Co. has been incorporated with $5,000,000 capital, by F. M. Walker, A. W. Wells, C. C. Connolly, J. A. Federman and W. L. Zinner.

CLEVELAND.—The Ohio Machine & Motor Co. has been incorporated with $50,000 capital, by I. H. Case, M. E. Evans, Engineers building, W. W. Richmond, E. G. Carnes and T. E. Vormelker.

CLEVELAND.—The Buckeye Brass & Mfg. Co., Harry Selker, president, 6410 Hawthorne avenue, is having plans drawn for a furnace room and foundry, 1-story, 30 x 110 feet, and 75 x 75 feet, to cost $50,000.

COLUMBUS, O.—The James Ohlen & Sons Saw Mfg. Co. recently was incorporated with $1000 capital, by L. W. Seymour, H. J. Bradley, F. Gould, H. S. Ballard and W. J. Ford.

COLUMBUS, O.—The Schmitt Brass Foundry Co. recently was incorporated with $10,000 capital, by G. W. Schmitt, Ed. Schmitt, S. F. Deardof, G. M. Schmitt and C. V. Dehnoof.

DAVENPORT, IOWA.—The Nelson Mfg. Co. contemplates a 4-story warehouse, 96 x 140 feet, to cost $175,000.

GREENVILLE, O.—The Economy Stove Co. recently was incorporated with $75,000 capital, by O. Z. Vannoy and others.

HUBBARD, O.—The Powell Pressed Steel Co. has been incorporated with $225,000 capital, by Ward Beecher, W. J. Powell, E. J. Powell, H. S. Wyld and A. M. Henderson.

LIMA, O.—The Garford Motor Truck Co. has awarded the contract for an assembly and stock building to cost $300,000.

LORAIN, O.—The Thew Shovel Co. recently was incorporated with $1250 capital, by J. H. Watson Jr., M. C. Byrnes, J. T. Scott, B. E. Robertson and M. C. Myers.

SANDUSKY, O.—The Maibohm Motors Co. has been incorporated with $2,500,000 capital, by H. C. Maibohm, T. W. Cushing, A. K. Nier and M. L. Osborn.

TOLEDO, O.—The Houghton Malleable Castings Co. has been incorporated with $500,000 capital, by F. S. Lewis, R. Newbegin, C. H. Lemmon, M. J. Warner and S. A. Carter.

WARREN, O.—The Alloy Electric Steel Casting Co. recently was incorporated with $150,000 capital, by H. L. Coxey, J. S. Coxey and others.

YOUNGSTOWN, O.—The Alliance Machine Steel Co. plans to double its capacity, raising it from 25 to 50 tons daily.

YOUNGSTOWN, O.—The plant of the Alliance Brass & Bronze Co. was damaged by fire recently. The loss has been estimated at $15,000.

In The South

BENTON, KY.—The Benton Light & Power Co., W. L. Harrington, manager, plans to install an electric power plant at an estimated cost of $10,000.

HARLAN, KY.—The Bowen Foundry, Machine & Electrical Co. has increased its capital from $20,000 to $50,000, and is reported planning to enlarge.

LOUISVILLE, KY.—The Mitchell Farm Light Co. has been incorporated with $5000 capital, by F. T. Mitchell, W. B. Hoke and K. R. Lewis.

LOUISVILLE, KY.—The O. K. Stove & Range Co. plans the erection of plant additions, including a foundry, to be built at an estimated cost of $60,000.

LOUISVILLE, KY.—The Francke-Hicks Bedding Machine Co. has been incorporated to engage in the manufacture of bedding machinery, by D. Franke, F. Hicks and others.

LOUISVILLE, KY.—The Springfield Sprayer Distributing Co., capital $10,000, has been incorporated by J. M. Buckner and M. R. Cotton, to engage in the manufacture of spraying machinery.

LOUISVILLE, KY.—The Independent Brass Works, Center and Walnut streets, has closed a contract for the erection of a building to increase its foundry space.

LOUISVILLE, KY.—The Peerless Mfg. Co., manufacturer of irons, fireplace fixtures, etc., recently reorganized, is remodeling the power and heating equipment, and installing new motors.

LOUISVILLE, KY.—The Inman Veneer & Panel Co. has had plans prepared for the erection of a power plant and a core room, and will install additional machinery at an estimated cost of $30,000.

LOUISVILLE, KY.—A permit has been taken out by the Louisville Cooperage Co. for the erection of an addition to its power plant. The company will install two new boilers, increasing the power 500 horsepower.

OWINGSVILLE, KY.—The Owingsville Electric Light Co., E. V. Brother, secretary-manager, plans to install a generator.

HUNTINGTON, W. VA.—The Ohio Valley Enameling Co. has let the contract for plant additions.

NATOAKA, W. VA.—The American Armature & Engineering Co. will establish a plant for armature work.

PARKERSBURG, W. VA.—The Acme Fishing Tool Co. contemplates a 1-story boiler house.

WHEELING, W. VA.—The Steel Alloys Corp., which was recently incorporated with $1,000,000 capital, is looking for a site on which to erect a plant.

CHATTANOOGA, TENN.—The Somerville Iron Works, Somerville, N. J., will erect a plant here for the manufacture of soil pipe and fittings.

SHELBY COUNTY, TENN.—The Cochran Machine Tool Co. recently was incorporated with $10,000 capital, by Robert York, C. W. Cochran, G. S. Lovell, A. F. Roebuck and C. B. Cochran.

DURHAM, N. C.—The Carolina Automatic Machinery Co. has been incorporated with $25,000 capital, by J. S., A. H. and W. F. Carr.

ELIZABETH, N. C.—The Elizabeth City Iron Works & Supply Co. will erect a shipbuilding and repair plant at an estimated cost of $100,000.

GASTONIA, N. C.—Michael & Bivens, machinists, have increased their capital to $100,000, and will erect a 40 x 60-foot building.

Throughout the West

DES MOINES, IOWA.—The Mid-West Metals Mfg. Co., capitalized at $30,000, has been chartered to manufacture stampings and dies by Rex Fowler, Donald Harlow and D. E. Emanuel.

HOLDEN, MO.—Plans have been made by Archer and Stevens, Kansas City, for waterworks improvements to cost $150,000.

ST. LOUIS.—The E. B. Hartwell Tool & Handle Co., capitalized at $100,000, has been chartered to manufacture tools and machine parts by E. B. Hartwell, Albert Blank and Frank G. Helgoth as incorporators.

HOUSTON, TEX.—The Lucey Mfg. Co., Mason building, will build a foundry, machine shop and forge shop, costing $1,000,000.

SWEETWATER, TEX.—The Armstrong Farm Tractor Co. is having plans prepared for a tractor plant costing $130,000, with equipment, the first unit being 100 x 200 feet.

BRISTOW, OKLA.—The Bristow Machine & Boiler Co. recently was incorporated with $50,000 capital, by C. Ross Anthony, A. L. McClaskey and William Shoefstall, all of Cleveland, Okla.

MORRIS, OKLA.—The Great Western Electric Co. has been incorporated with $250,000 capital, by C. J. Rogers, W. A. Wilson and H. G. Toomer.

MUSKOGEE, OKLA.—The Oklahoma Engine, Machine & Boiler Co. plans a modern machine shop.

MOUND VALLEY, KANS.—Plans are being prepared for a waterworks system costing $55,000, by H. G. Olmsted & Co., Oklahoma City.

BABIN, MONT.—The Job Mining Co. contemplates a mill at the Katie mine.

HELENA, MONT.—The city council is considering a hydroelectric plant near Rimmi.

KIRKLAND, WASH.—The Occidental Rubber Co., H. H. Haseltine, president, plans a plant here for the manufacture of tires and other rubber goods, and will purchase motors, electrical equipment, piping, boilers, etc.

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$28.50 to 29.00
Chicago	24.50 to 25.00
Eastern Pennsylvania	25.00 to 26.00
Cleveland	26.00 to 26.50
St. Louis	23.00 to 24.00
Buffalo	26.50 to 27.50
New York (dealers)	21.50 to 22.00
Cincinnati	24.00 to 24.50
Birmingham	21.00 to 22.00
Valleys	27.00 to 27.25
Boston (dealers)	21.00 to 22.00

BUNDLED SHEETS

Pittsburgh	$21.50 to 22.00
Eastern Pennsylvania	21.00 to 22.00
Cleveland	19.00 to 19.50
Buffalo	19.00 to 20.00
Cincinnati	16.50 to 17.00
St. Louis	15.50 to 16.00

STEEL RAILS, SHORT

Chicago	$29.50 to 30.50
Boston (dealers)	21.00 to 22.00
Cleveland	25.50 to 26.00
St. Louis	29.00 to 29.50
Birmingham	21.00 to 23.00
Cincinnati	18.50 to 19.50

STOVE PLATE

Pittsburgh	$34.00 to 35.00
Chicago	35.50 to 36.00
Eastern Pennsylvania	29.00 to 30.00
Cleveland	30.00 to 31.00
St. Louis	33.50 to 34.00
Buffalo	30.00 to 31.00
New York	27.00 to 28.00
Cincinnati	25.00 to 26.00
Birmingham	30.00 to 32.00
Boston	26.50 to 27.50

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$32.50 to 33.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	32.00 to 33.00
Buffalo	32.00 to 33.00

SHOVELING STEEL

Chicago	$24.00 to 24.50
St. Louis	22.00 to 22.50

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$29.50 to 30.00
Chicago	29.50 to 30.00
St. Louis	27.50 to 28.00

BALED SHEETS

Pittsburgh	$25.50 to 26.00
Chicago	21.50 to 22.00

FROGS, SWITCHES, GUARDS

Chicago	$24.50 to 25.00
St. Louis	26.00 to 26.50
Eastern Pennsylvania	25.00 to 26.00

BOILER PLATE, CUT

Chicago, No. 1	$20.00 to 20.50
St. Louis	18.00 to 18.50

ANGLE BARS—STEEL

Chicago	$27.50 to 28.00
St. Louis	26.00 to 26.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$34.00 to 35.00
Pittsburgh, No. 2	28.50 to 29.00
Chicago, No. 1	30.00 to 30.50
Chicago, No. 2	27.00 to 27.50
Eastern Pennsylvania, No. 1	37.00 to 38.00
Cleveland, No. 1	31.00 to 32.00
St. Louis, No. 1	28.00 to 28.50
St. Louis, No. 2	27.00 to 27.50
Buffalo	28.00 to 29.00
Cincinnati	28.00 to 29.00
Birmingham, No. 1	23.00 to 25.00
New York, No. 1 (dealers)	31.00 to 31.50
Boston (dealers)	30.00 to 31.00

WROUGHT PIPE

Eastern Pennsylvania	$25.00 to 26.00
Buffalo	19.00 to 20.00
New York (dealers)	21.50 to 22.00
Boston (dealers)	20.50 to 21.50

YARD WROUGHT

Eastern Pennsylvania, No. 1	$30.00 to 31.00

CITY WROUGHT

New York, long (dealers)	24.50 to 25.50

BUSHELING

Chicago, No. 1	$24.00 to 24.50
Chicago, No. 2	16.00 to 16.50
Cleveland, No. 1	22.00 to 22.50
Cleveland, No. 2	19.00 to 21.00
St. Louis, No. 1	25.75 to 26.75
Buffalo, No. 1	22.00 to 23.00
Cincinnati, No. 1	20.50 to 21.50
Eastern Pennsylvania, No. 1	24.00 to 25.00

MACHINE SHOP TURNINGS

Pittsburgh	$19.00 to 19.50
Chicago	15.50 to 16.00
Eastern Pennsylvania	20.00 to 21.00
Eastern Pennsylvania (Blast furn.)	19.00 to 20.00
Eastern Pennsylvania (chemical)	27.00 to 30.00
Cleveland	16.25 to 16.75
Buffalo	17.50 to 18.00
New York (dealers)	17.50 to 18.00
St. Louis	16.00 to 16.50
Cincinnati	16.00 to 17.00
Birmingham	17.50 to 19.00
Valleys	17.50 to 18.00
Boston (dealers)	16.75 to 17.25
Boston (blast furnace) (dealers)	15.00 to 15.50

CAST IRON BORINGS

Pittsburgh	$21.50 to 22.00
Chicago	16.25 to 16.75
Eastern Pennsylvania	22.00 to 24.00
Eastern Pennsylvania (chemical)	27.00 to 30.00
Cleveland	18.50 to 18.75
St. Louis	16.00 to 16.50
Buffalo	20.00 to 21.00
New York (dealers' price)	19.00 to 20.00
Cincinnati	14.50 to 15.00
Birmingham	14.50 to 15.00
Valleys	19.75 to 20.00
Boston (dealers)	18.50 to 19.50
Boston (blast furnace) (dealers)	14.00 to 14.50

IRON AXLES

Pittsburgh	$47.00 to 48.00
New York (dealers)	46.00 to 47.00
Chicago	44.50 to 45.00
Eastern Pennsylvania	45.00 to 46.00
Cleveland	42.50 to 43.00
St. Louis	40.00 to 40.50
Buffalo	40.00
Cincinnati	30.00 to 30.50
Birmingham	34.00 to 35.00

IRON RAILS

Chicago	34.50 to 35.00
Cleveland	30.00 to 31.00
St. Louis	33.50 to 34.00
Buffalo	28.00 to 29.00
Cincinnati	25.00 to 25.50

PIPES AND FLUES

Chicago	20.00 to 20.50
Cleveland	25.00 to 26.00
St. Louis	22.50 to 23.00
Cincinnati	21.00 to 21.50

GRATE BARS

Chicago	34.00 to 34.50
Cleveland	30.00 to 31.00
Buffalo	24.00 to 25.00
New York	25.50 to 26.50
Eastern Pennsylvania	30.00 to 31.00

FORGE FLASHINGS

Cleveland, large	$20.00 to 20.50
Cleveland, small	21.00 to 21.50
Chicago, small	20.50 to 21.00
Boston (dealers)	15.00 to 16.00

FORGE SCRAP

Chicago	27.00 to 27.50
Eastern Pennsylvania, No. 1	21.00 to 22.00
Boston	14.50 to 15.00

ARCH BARS AND TRANSOMS

Chicago	35.00 to 35.50
St. Louis	36.00 to 36.50

ANGLE BARS—IRON

Chicago	35.50 to 36.00
St. Louis	33.00 to 33.50

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$23.00 to 24.00
Eastern Pennsylvania	22.00 to 23.00
Boston (dealers)	17.50 to 18.00
St. Louis	17.00 to 17.50
Cleveland	23.50 to 24.00
Buffalo	21.00 to 22.00
Chicago	20.50 to 21.00

STEEL CAR AXLES

Pittsburgh	$37.00 to 38.00
Eastern Pennsylvania	35.00 to 36.00
Cleveland	37.50 to 38.50
St. Louis	37.00 to 37.50
Buffalo	40.00
Chicago	39.50 to 40.00
New York (dealers)	37.00 to 38.00
Birmingham	34.00 to 35.00
Boston (dealers)	29.00 to 30.00

SHAFTING

Eastern Pennsylvania	36.00 to 38.00
St. Louis	35.50 to 36.00
New York (dealers)	30.00 to 31.00
Chicago	35.50 to 36.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$41.00 to 42.00
Pittsburgh, steel	30.00 to 31.00
Chicago, iron	38.50 to 39.00
Eastern Pennsylvania, iron	40.00 to 42.00
Cleveland, iron	36.00 to 37.00
St. Louis, iron	33.50 to 34.00
Buffalo, iron	37.00 to 38.00
Birmingham, iron	31.00 to 33.00
Birmingham, tram car	30.00 to 32.00
Boston	38.00 to 39.00
Cincinnati	26.00 to 27.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$41.00 to 42.00
Chicago, cupola	43.00 to 43.50
Eastern Pennsylvania, cupola	39.00 to 40.00
Cleveland, cupola	39.00 to 40.00
New York, cupola (dealers)	37.50 to 38.50
Cincinnati, No. 1, machinery, cupola	37.50 to 38.00
Birmingham, cupola	34.00 to 35.00
St. Louis, railroad	39.00 to 39.50
St. Louis, agricultural	38.50 to 39.00
Buffalo	37.00 to 38.00
Boston	41.50 to 42.00
Valleys	38.00 to 39.00

HEAVY CAST

New York (dealers)	34.50 to 35.50
Buffalo	27.00 to 28.00
Pittsburgh	36.00 to 37.00
Cleveland	30.00 to 30.50
Boston	32.00 to 33.00

MALLEABLE

Pittsburgh, railroad	$33.00 to 34.00
Pittsburgh, agricultural	32.00 to 33.00
Chicago, railroad	34.00 to 34.50
Chicago, agricultural	34.00 to 34.50
Eastern Pennsylvania, railroad	29.00 to 30.00
Cleveland, railroad	31.50 to 32.00
Cleveland, agricultural	27.00 to 28.00
St. Louis, railroad	29.00 to 29.50
St. Louis, agricultural	28.00 to 28.50
Cincinnati, railroad	28.00 to 28.50
Cincinnati, agricultural	28.00 to 28.50
Boston, railroad	28.00 to 29.00
Buffalo	31.00 to 32.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$36.00 to 37.00
Chicago	34.00 to 34.50
Eastern Pennsylvania	35.00 to 36.00
Cleveland	34.00 to 35.00
St. Louis	32.00 to 32.50
Birmingham	32.00 to 34.00
Boston (dealers)	30.00 to 30.50

LOCOMOTIVE TIRES

Chicago	30.00 to 31.00
St. Louis	39.00 to 39.50

BOILER PUNCHINGS

Chicago	30.00 to 30.50
Eastern Pennsylvania	30.00 to 32.00

A Statement

We wish to state we make a specialty of handling low phos scrap for use in Steel Foundries and Electric Furnaces. and would appreciate your inquiries when in the market.

See us
Concerning your
Requirements
And our
Prices

MILLCO
SERVICE.

Sell
Carloads
Right
And be
Pleased.

The James S. Miller Company
McCormick Bldg — Chicago.

Iron and Steel Prices

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$7.45
Mesabi Bessemer, 55 iron	7.20
Old range non-Bess., 51½ iron	6.70
Mesabi non-Bess., 51½ iron	6.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 75c to 80c per unit.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 75c to 80c per unit, nominal.

Warehouse Prices

Steel bars, Boston	4.50c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c to 4.00c
Steel bars, Detroit	3.58c
Steel bars, Philadelphia	4.25c
Steel bars, New York	3.52c to 4.25c
Steel bars, St. Louis	3.44c to 4.00c
Steel bars, Cincinnati	3.59c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.515c
Iron bars, Boston	4.50c
Iron bars, Buffalo	4.25c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.58c
Iron bars, St. Louis	4.00c
Iron bars, Cincinnati	3.55c
Iron bars, Philadelphia	4.25c
Iron bars, New York	4.25c
Shapes, Chicago	3.47c
Shapes, Detroit	3.68c
Shapes, Boston	4.25c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c to 4.00c
Shapes, Cleveland	3.37c to 4.10c
Shapes, Philadelphia	3.95c
Shapes, Buffalo	3.46½
Shapes, Cincinnati	3.65c
Plates, Buffalo	3.665c
Plates, Chicago	3.67c
Plates, Detroit	3.88c
Plates, Boston	4.80c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c to 4.00c
Plates, Cleveland	3.57c to 4.50c
Plates, Philadelphia	4.50c
Plates, Cincinnati	3.80c
No. 10 blue anl. sheets, N. Y.	5.30c to 6.50c
No. 10 blue anl. sheets, Phila.	6.50c
No. 10 blue anl. sheets, Chicago	4.57c to 4.82c
No. 10 blue anl. sheets, Cleveland	5.85c
No. 10 blue anl. sheets, Boston	6.05c
No. 10 blue anl. sheets, Buffalo	4.815c
No. 10 blue anl. sheets, St. L.	5.34c
No. 10 blue anl. sheets, Cincinnati	4.80c
No. 10 blue anl. sheets, St. Paul	4.79c
No. 10 blue anl. sheets, Detroit	5.23c
No. 28 black sheets, Chicago	5.62c to 6.00c
No. 28 black sheets, New York	7.00c to 8.00c
No. 28 black sheets, Phila.	7.00c
No. 28 black sheets, Cleveland	6.65c
No. 28 black sheets, Boston	8.15c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	6.50c
No. 28 black sheets, St. Louis	6.60c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	6.25c
No. 28 galv. sheets, Chicago	6.97c to 7.50c
No. 28 galv. sheets, New York	8.25c to 10.00c
No. 28 galv. sheets, Phila.	9.00c
No. 28 galv. sheets, Boston	9.50c
No. 28 galv. sheets, Cleveland	8.00c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	8.00c
No. 28 galv. sheets, Buffalo	7.50c
No. 28 galv. sheets, St. Louis	8.10c
Bands, New York	4.22c
Bands, Boston	6.00c
Bands, Detroit	4.18c
Bands, Buffalo	4.315c
Hoops, Buffalo	4.315c
Hoops, Boston	7.00c
Hoops, New York	4.47c
Hoops, Detroit	4.43c
Cold rolled shafting, Buffalo	4.85c
Cold rolled shafting, New York	5.25c
Cold rolled shafting, Boston	6.00c
Cold rolled flats, squares and hexagons, New York	6.00c
Cold rolled rounds	5.50c

Mill Sheet Schedule

Black

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long. Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 13-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inc., 24, 26, 28, 30 and 36 in. wide by 72, 84, 96 and 120 in. long. Extras for width and length to be added.

Freight Rates

PIG IRON

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	$4.30
Chicago to:	
Des Moines	3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

FINISHED MATERIAL

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	25.0 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.00
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Iron Ore

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galvanized
⅛, ¼ and ⅜-inch.	47 to 50½	20½ to 24
½-inch	51 to 54½	36½ to 40
¾ to 3-inch	54 to 57½	40½ to 44

Lap Weld

2-inch	47 to 50½	34½ to 38
2½ to 6-inch	50 to 53½	37½ to 41
7 to 12-inch	47 to 50½	33½ to 37
13 to 14-inch	37½ to 41	
15-inch	35 to 38½	

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	52 to 55½	38½ to 42
2-inch	45 to 48½	32½ to 36

Lap Weld

2½ to 6-inch	48 to 51½	35½ to 39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch.	43 to 46½	25½ to 29
½-inch	48 to 51½	35½ to 39
¾ to 1¼-inch	52 to 55½	39½ to 43
2 to 3-inch	53 to 56½	40½ to 44

Lap Weld

2-inch	45 to 48½	33½ to 37
2½ to 4-inch	48 to 51½	36½ to 40
4½ to 6-inch	47 to 50½	35½ to 39
7 to 8-inch	43 to 46½	29½ to 33
9 to 12-inch	38 to 41½	24½ to 28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	39 to 42½	28½ to 32
¾ to 1¼-inch	42 to 45½	31½ to 35
2 to 2½-inch	44 to 47½	33½ to 37

Lap Weld

2-inch	37 to 40½	27½ to 31
2½ to 4-inch	39 to 42½	29½ to 33
4½ to 6-inch	38 to 41½	28½ to 32
7 to 8-inch	33 to 36½	19½ to 23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black	Galv.
⅛-inch	1	+14
¼-inch	24½	+ 2½
⅜-inch	25½	+ 1½
½-inch	29½	11½
¾ to 1¼-inch	34½	18½

Lap Weld

2-inch	28½	14½
2½ to 6-inch	30½	17½
7 to 12-inch	27½	14½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼-inch	+21	+36
⅜-inch	23½	6½
½-inch	28½	15½
¾ to 1¼-inch	34½	19½

Lap Weld

2-inch	29½	16½
2½ to 4-inch	31½	19½
4½ to 6-inch	30½	18½
7 and 8-inch	22½	10½
9 and 12-inch	17½	5½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galv.
½-inch	15½	3½
¾ to 1¼-inch	20½	8½

Lap Weld

2-inch	16½	4½
2½ to 4-inch	18½	9½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

STEEL

1¾ and 2-inch	12½ to 19½
2¼-inch	17 to 24
2½ to 3¼-inch	23 to 30½
3½ to 4½-inch	30½ to 40½

IRON

1¾-inch	+30
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4¼-inch	—16

Here's Another Efficient Silent Chain Drive

700 H. P., 8ft. Centers

A leather belt drive could never transmit this large amount of power on such short centers, yet Link-Belt Silent Chain transmit the power with highest efficiency. It combines the best points of the leather belt drive with the positive action of the gear drive. It is more efficient than either.

Probably you have a machine which could be operated more efficiently by a Link-Belt Silent Chain Drive. Send for one of our Drive Chain Engineers and get his recommendations. Also write for our 128 page Data Book No. 125.

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LINK-BELT COMPANY

PHILADELPHIA CHICAGO INDIANAPOLIS

New York	299 Broadway
Boston	49 Federal St.
Pittsburgh	1501 Park Bldg.
St. Louis	Central Nat'l Bank Bldg.
Buffalo	647 Ellicott Square
Wilkes-Barre	24 Nat'l Bank Bldg.
Huntington, W. Va.	Robson-Prichard Bldg.
Cleveland	429 Kerkeleier Bldg.
Detroit	922 Dime Bank Bldg.
Minneapolis	419 S. Third St.
Kansas City, Mo.	306 Kinghurst Bldg.
Seattle	576 First Ave., S.
Portland, Ore.	First and Stark Sts.
San Francisco	582 Market St.
Los Angeles	168 N. Los Angeles St.
Toronto, Can.	Canadian Link-Belt Co., Ltd.
Denver	Lindroth, Shubart & Co., Boston Bldg.
Louisville, Ky.	Frederick Wehle, Starks Bldg.
New Orleans	C. O. Hins, Hibernia Bank Bldg.
Birmingham, Ala.	S. L. Morrow, 720 Brown-Marx Bldg.
Charlotte, N. C.	J. S. Cothran, Com'l Bank Bldg.

SILENT

MEMBER OF ACMA

LINK-BELT SILENT CHAIN DRIVES

We Also Make

- ☐ Elevators and Conveyors
- ☐ Link-Belt and Sprockets
- ☐ Truck and Tractor Chains
- ☐ Electric Hoists
- ☐ Portable Loaders
- ☐ Coal and Ashes Systems
- ☐ Coal Pockets
- ☐ Complete Sand and Gravel Plants

Write for Catalogs
Place X in Square

New Trade Publications

BOILER FEEDING.—A booklet entitled, "Saving Fuel Automatically and Scientifically in the Boiler Room," has been published by the Northern Equipment Co., Erie, Pa., in which boiler water feeding is discussed in a thorough manner.

ENGINEERING HOUSE ORGAN.—Frank D. Chase, Inc., industrial engineers, has just issued Volume 1, No. 1, of *Industry*, a house organ to be published "every once in a while" for the benefit of the organization and its friends. The initial issue contains 20 pages filled with well selected material and illustrated with halftones.

TOOLS.—A 24-page illustrated booklet has been issued by A. A. Jones & Shipman, Ltd., Leicester, England, entitled "Better Tools," in which the salient features of tools which the company manufactures are described. Tool holders for use on both American and English lathes, side tools, cutting-off tools, knurling tools, threading tools, boring bars, lathe carriers, sleeves sockets, etc., are described.

ENGINEERING.—Nine bulletins bound in one cover are being distributed by Viele, Blackwell & Buck, New York, in which the company's various engineering activities and material are described. The bulletins are entitled: "Rails and Accessories"; "Structural Steel"; "Iron and Steel Bars"; "Wrought Steel and Iron Tubes and Pipe"; "Steel and Iron Plate"; "Brass and Copper Products"; "Heavy Chemicals"; "Suspension Insulators"; and "Extras and Differentials."

SPACE HEATERS.—The Cutler-Hammer Mfg. Co., Milwaukee, has published two circulars on electric space heaters. One is a small leaflet in which the heaters are described and the other is a broadside showing advertisements which the company will publish in the technical and trade press during the next six months. The heaters are flat like an ordinary rule, the thickness being only $\frac{7}{8}$ of an inch. All parts are enclosed and the resistor is encased in sheet mica which in turn is encased in a steel jacket.

OIL BURNERS.—The Hauck Mfg. Co., Brooklyn, N. Y., has published a 16-page booklet in which various types of oil burners are described and illustrated. Many of the illustrations show practical applications of these burners to various types of furnaces, and part of the booklet is devoted to sketches showing other purposes to which the burners can be adapted. The oil burners are made in four designs. The atomizing type burns any grade of crude or kerosene oil in connection with compressed air or steam. The positive pressure style atomizes fuel, crude or kerosene oil with pressure from 2 to 10 pounds supplied by a positive pressure blower. The low pressure style atomizes the oil by using $1\frac{1}{2}$ ounces or more fan blast pressure, and burns fuel, crude, kerosene or refuse oil. The fourth type, known as the vaporizing is a self-contained type burner. Oil is forced under pressure of from 10 to 60 pounds to the burner, where it is vaporized. These burners have their own combustion chambers and do not depend upon the furnace or fire brick walls for combustion, as the flame starts from the tip of the burner, according to the booklet.

Foreign Opportunities

An importer in Belgium desires to secure an agency on commission for the sale of coal, furnace blocks, tiles, fire brick, silica brick, clay products for glass factories, metallurgical works, etc. Quotations should be given c.i.f. any European port, and correspondence may be in English. Opportunity No. 31967.

The representative in the United States of a firm in Italy desires an agency for the sale in his country of water and steam fittings, kitchenware, locks, hinges and general hardware. Opportunity No. 31983.

The water commissioners of a city in Scotland desire to purchase 850 tons of cast iron pipe. Quotations should be given c.i.f. port in Scotland. Opportunity No. 31984.

Business Changes Recently Announced by the Trade

THE T. W. Price Engineering Co., designer and constructor of steel plants and foundries, has moved its main office from the Woolworth building, New York, to Philadelphia, and its drawing room to New Brunswick, N. J. Until the necessary accommodations in Philadelphia can be obtained, the main office of the company temporarily will be located in New Brunswick. The company still will continue to maintain a small sales office in the Woolworth building.

* * *

The Lindstrom Tool, Die & Gauge Works, Inc., Bridgeport, Conn., has changed its name to the Lindstrom Tool & Toy Co.

* * *

The Thompson Electric Co., 5606 Euclid avenue, Cleveland, has removed to enlarged quarters at 226 St. Clair avenue.

* * *

The Trumbull Steel Co., Warren, O., has opened a new sales office at 532 Widener building, Philadelphia, in charge of J. B. DeWolf.

* * *

The G. H. Williams Co., Erie, Pa., has opened a branch office at room 317, 30 Church street, New York City, in charge of H. F. Randall.

* * *

The William Graver Tank Works, Chicago, has changed its name to the Graver Corp., without changing management, ownership or directorate.

* * *

The New York office of the America-Holland Trading association was discontinued Jan. 15. Uncompleted business should be taken up with Jules Kievits, care Hernandes Robinson & Co., Inc., 29 Broadway, New York. On Feb. 1, Mr. Kievits established an office in Amsterdam, Holland.

* * *

The Duff Mfg. Co., Pittsburgh, has opened a branch sales office in the Book building, Detroit, in charge of Frank J. Hunt. This branch will handle the Duff company's forge department output.

* * *

The Empire Tube & Steel Corp., College Point, N. Y., takes over the tube mill portion of the plant of the Empire Art Metal Co., Inc., that city.

* * *

The Booth Electric Furnace Co., Chicago, has opened branch offices in Detroit and Birmingham, Ala. The former at 805 Hammond building is in charge of M. A. Beltaire Jr., and the latter in the Brown & Marx building is in charge of Gassman & Cunningham.

* * *

The Hauck Mfg. Co., 101 to 113 Eleventh street, Brooklyn, N. Y., has removed its burner service stations, Pittsburgh, Boston and Cleveland. The first from 2930 Penn avenue to 105 Wood street; the second, from 70 High street to 149 Berkeley street, corner of Columbus avenue; the third from 2114 Superior viaduct to 1106 Walnut avenue.

* * *

The Jambor Tool & Stamping Co., Milwaukee, was incorporated at $100,000 to take over the metal stamping and tool and die making business of the Jambor Mfg. Co. One building 50 x 120 feet, will be added to its present capacity.

* * *

To bring about a closer cooperation between its factory and sales department, offices of the Electrolabs Co., 15 William street, New York, have been removed to 2635 Penn avenue, Pittsburgh. A branch office will be maintained at 30 Church street.